Caught in the Headlights: Designing for Creative Learning and Teaching in Higher Education

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ABSTRACT

Creativity is often perceived to be an elusive and ill-defined phenomenon. Despite its complexity creativity can be the subject of inquiry like any other abstract concept. Current research into higher education confirms that creativity is more than a disposition, talent or skill possessed only by exceptionally gifted students. Rather, the argument for "second generation" creativity supports the proposition that all individuals have the potential for creative ways of learning, thinking and being; creativity can be fostered, and needs to be designed for in curricula. While Australian universities commonly list creativity as a graduate capability, there is evidence that higher education practitioners have difficulties expressing, developing and measuring creativity. The problem is not that creativity is absent from curricula, but that it may be implicit rather than explicit, and that analytic modes of knowledge generation tend to be prioritised over the creative in contemporary higher education. Teaching *for creativity* and *teaching creatively* remain problematic.

Although the literature on creativity has grown exponentially over the last few decades, research into its development in higher education cross-disciplinary contexts is nascent. In addition, there is little research that acknowledges the impact of the complex, technology-rich environments in which educators operate, where the goal is to promote student creativity. Therefore, the aim of this study was to explore higher education practitioners' concepts of creativity, and the means by which they design for creative learning and teaching. A mixed methods approach framed the inquiry, underpinned by a social constructivist epistemology. Data was collected via a survey of tertiary educators and five case studies of exemplary practitioners. Descriptive and inferential statistical methods were employed to interpret the quantitative data, and a new variant of grounded theory, *informed grounded theory* applied for the qualitative data analysis.

The findings indicated that creativity remains a polythetic construct, valued for its place in student learning. Not all practitioners, however, are confident in their ability to design for creative learning outcomes, particularly where the use of digital learning technologies compounds this already complex task. By contrast, exemplary creative practitioners are adept at implementing their creative vision and negotiating

barriers to creative development, including technological constraints. They create and facilitate pathways for themselves and their students by adopting an attitude to learning and life that encourages playfulness and habits of creativity. Importantly, exemplary practitioners have strategies to avoid the phenomenon of being "caught in the headlights": that is, where students become temporarily paralysed by the pressure to "be creative", unable to respond openly and meaningfully.

This study makes a significant contribution to theory and practice in the domain, providing insights from a general sample of higher education practitioners regarding creative development, as well as detailed perspectives from exemplary teachers in the creative industries and social science. A new form of learning design patterning that foregrounds creative process was derived from the research, plus pedagogical design principles, and an ecological model of the elements and relationships that contribute to fostering and designing for creativity in higher education.

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LIST OF KEY TERMS

The following key terms are used throughout the thesis and provided here for ready reference.

Blended learning: The designed integration of learning where face-to-face (f2f) and web-based learning methods are combined. Once used interchangeably with the term flexible learning, it is often now used instead of the latter term (Alexander, 2010).

Creativity: There are many definitions of creativity and their usefulness is dependent on context and purpose, but one generally relevant to this project is that of Sternberg, Kaufman and Pretz (2002): "Creativity is the ability to produce work that is novel (i.e. original, unexpected), high in quality, and appropriate (i.e. useful, meets task constraints)" (p. 1). Koestler's (1964) definition is also useful for some contexts: "the defeat of habit by originality" (p. 96).

Delivery mode: Primary method by which a unit or course is presented. In this context modes include face-to-face (on campus/internal enrolment), blended (see above), and online or distance education (off campus/external enrolment).

Design principles: In the context of educational research, design principles are "heuristic guidelines to help others select and apply the most appropriate knowledge for a specific design task in another setting" (Nieveen, McKenney, & van den Akker, 2006, p. 153).

Distance education: A form of technology-enhanced learning where the learner is separated in time and space from the teacher and their peers.

Educational design: Also known as educational development, or by the earlier term instructional design. The practice of purposeful and effective design for learning, usually for a course of study.

Elearning: "The process of learning and teaching with computers and other associated technologies, particularly through use of the Internet" (Littlejohn & Pegler, 2007, p. 15). The term emerged in the mid 1990s, and is still used to imply the use of a wide range of digital technologies and pedagogies in support

and delivery of education. Often used synonymously with technology-enhanced learning (Phillips, McNaught, & Kennedy, 2012).

Graduate attributes or capabilities: Generic attributes that a student is expected to have achieved on graduation from a recognised higher education institution. The terms attributes and capabilities are used interchangeably (Barrie, Hughes, & Smith, 2009). They usually relate to notions of good citizenship, employability, and life long learning, and typically include dimensions relating to cognitive, social, and dispositional capabilities.

Grounded theory: A methodological approach to the collection and analysis of qualitative data developed by Glaser and Strauss (1967). The purpose is to inductively build theory from the data.

ICTs: Information and communications technologies. ICTS are the digital tools, products, applications and services that store and manipulate data, and/or receive and send information electronically.

Informed grounded theory: A constructivist version of grounded theory that allows for early integration of the literature review in the research design (Thornberg, 2012).

Learning design: (1) The process of creating learning experiences for students through a process of educational design; or (2) a document that captures the outcome of that process; or (3) a machine readable instantiation of a learning design, which may or may not be compliant to international standards.

Learning environment: The context in which learners work (Phillips et al., 2012). This may be face-to-face, online, or a mix of both as in a blended learning environment. It includes private and public learning spaces and the climate of that environment.

Learning Management System (LMS): A digital platform to support online and blended learning. It usually includes tools to manage communication, co-creation of resources, file sharing, assessments, user tracking, and class administration (e.g. Blackboard, Moodle, Sakai).

Networked learning: The term is sometimes synonymous with technology-enhanced learning or elearning. “Learning in which ICT is used to promote connections: between one learner and other learners, between learners and tutors, between a learning community and its learning resources” (Goodyear, Banks, Hodgson, & McConnell, 2004, p. 1).

Second generation creativity: A capacity for creativity that can be developed generally within the population. Also known as small “c” or “little c” creativity, it is distinguished from “high creativity” (Craft, 2001, p. 46), which is the extraordinary creativity of the most gifted.

Technology-enhanced learning (TEL): Key scholars in the field, Goodyear and Retalis (2010), view TEL as an umbrella term covering elearning, online learning and networked learning. It is not restricted to particular technologies or pedagogies, includes both hardware and software, and covers “circumstances where technology plays a significant role in making learning more effective, efficient or enjoyable” (Goodyear & Retalis, 2010, p. 8). It is also the expression adopted by the Australasian Council on Open, Distance and E-learning, ACODE (2014) to refer to circumstances in higher education “where technology is used to enable new types of learning practices and to enhance existing learning settings” (p. 11).

Unit: A single accredited component of a qualification or course of study in Australian higher education; also known as a subject.

200-level unit: A second-year unit. Similarly 300-level and 400-level units are third- and fourth-year units respectively.

LIST OF ABBREVIATIONS

HE: Higher Education

GT: Grounded Theory

ICTs: Information and Communication Technologies

LMS Learning Management System

TEL: Technology-Enhanced Learning

PUBLICATIONS AND PRESENTATIONS ARISING FROM THE RESEARCH

REFEREED CONFERENCE PAPER

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Philip, R. L. (2013). Cultivating creative ecologies: Creative teaching and teaching for creativity. In Frielick, S., Buissink-Smith, N., Wyse, P., Billot, J., Hallas, J. and Whitehead, E. (Eds.) *Research and Development in Higher Education: The Place of Learning and Teaching*, 36 (pp. 360-369). Auckland, New Zealand, 1-4 July 2013.

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PRESENTATIONS

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Other

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Philip, R. (2013). Illuminating the discourse on creative learning and teaching. *Illuminating Futures, Ignite! 2013.* Postgraduate conference, 3 October, Creative Industries Faculty, Queensland University of Technology.

Philip, R. (2014). Cases of creativity: Playing with the curriculum. *Exchanging Insights from Education Research,* Higher Degree Research Conference, 10-11 October, Faculty of Education, Queensland University of Technology.

STATEMENT OF ORIGINAL AUTHORSHIP

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: QUT Verified Signature

Date: 20 March 2015

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Chapter 1 Moving Creativity into the Spotlight: Introduction

> There are two kinds of light–the glow that illumines, and the glare that obscures.
>
> –James Thurber, *Lanterns and Lances* (1961, p. 134)

1.1 PURPOSE OF THE CHAPTER: ILLUMINATION

Creativity is often perceived to be an elusive and ill-defined phenomenon. Despite its complexity, creativity can be the subject of inquiry like any other abstract concept. The argument for "second generation" creativity that underpins this research supports the proposition that students in general have the potential for creative ways of learning, thinking and being in the world: students can develop their creative capacity, and creativity can be designed for in curricula. Because of globalisation and the contemporary demands of society and technology, educational needs are changing. There are now compelling reasons to investigate creativity, especially as it relates to learning and teaching in higher education. This includes, educators' understanding of creativity, methods for fostering and designing for creativity, and the means by which creative vision can be translated into practice.

This chapter sets the scene for exploration of the topic. I position the research within emerging global trends that tend to influence policy-makers, governments and educational institutions regarding creativity. Having outlined the background for the research and the research problem, the purpose of the research is clarified, including the aims, objectives, and research questions. The significance and scope of the research are identified in section 1.4, and the chapter concludes with a synopsis of the thesis chapters.

1.2 BACKGROUND AND RESEARCH PROBLEM

Governments, business, educational bodies and scholars around the world now encourage the development of creativity as a general economic and societal good (European University Association, 2007; McWilliam, 2007). It is valued for its potential to contribute to economic development, and to assist groups and individuals to better prepare for and adapt to a rapidly changing world. The focus on creativity

has emerged alongside global developments and changes in technology, science, economics, politics, culture and society (Araya & Peters, 2010; Florida, 2002). Creative capacity is seen as a driver for change, and a means of coping with, and contributing to the knowledge society and the creative economy (Florida, 2002). Despite growing interest in creativity, it is not clear from the literature that university educators in the main know how this capacity can be promoted in curricula (European University Association, 2007) or developed through creative teaching practice within disciplines (Williams & Askland, 2012). While creativity was once thought to be the preserve of exceptionally gifted and talented individuals, researchers now argue that most individuals can develop their creativity (e.g. Craft, 2006a; Herbert, 2010; McWilliam & Dawson, 2008). McWilliam and Dawson (2008) maintain that small "c", or "second generation" creativity (p. 663) can and should be fostered, and that creativity is core business for university educators.

Given the importance assigned to creativity and innovation in the creative economy (Florida, 2002; Howkins, 2010a), and its personal and social value (Csikszentmihalyi, 1997; Robinson, 2011), there is value in exploring conceptions of creativity in greater depth, to discover what teachers mean when they ask students to "be creative". There are pedagogical models on which research, theory and practice can build, many of which come from the arts and the creative industries (Eisner, 2002; Fleming, 2008; Robinson, 2011). Other disciplines such as engineering and business, however, also provide innovative examples and alternatives from which lessons can be learned (e.g. Baillie, 2002; Barrow, 2010; Kazerounian & Foley, 2007; Petocz, Reid, & Taylor, 2009; Swirski, 2012). The literature around the contemporary student experience and interpretation of creativity, nonetheless, lags somewhat (but see Reid & Petocz, 2004; Reid & Solomonides, 2007).

As the literature grows, and new creative pedagogical models emerge, it is timely to investigate contextual factors that impact the development of creativity: this includes the technologies that either contribute to or limit creativity in practice. The technology-enhanced learning (TEL) environments (Goodyear & Retalis, 2010) in which teachers now operate in higher education rely on integrated, creative pedagogical practice to be effective. These environments are a complex web of new and emerging information and communication technologies (ICTs), such as learning

management systems, mobile technologies, social media, digital image and content manipulation software, and file sharing applications. Many of these new technologies are very powerful, and time poor academics often find it difficult to fully evaluate them for their potential and educational purpose (Laurillard, 2012). Acknowledging these considerations, this investigation into current perceptions and practices around creativity and the use of relevant enabling technologies is timely.

The research problem addressed here is therefore multifaceted and problematic. It rests on two major assumptions: that creativity is a complex phenomenon, and a capability that all students need to develop. Teachers are expected to foster creativity as part of a suite of graduate capabilities, yet the discourse around creativity is poorly developed in higher education and conceptions of creativity are disputed. While present in higher education curricula, creativity often remains implicit rather than explicit, dependent on context and discipline. Analytic rather than creative ways of thinking often dominate learning and teaching in higher education, and educators continue to have difficulty assessing, designing for and expressing this key graduate capability.

1.3 PURPOSE OF THE RESEARCH

1.3.1 Aim

Given the importance of creativity to learning and teaching, the overall aim of the research was to investigate *how educators foster and design creativity in higher education.* The goal was to shine a light on the issues and discover more about the meaning and value of creativity in the learning and teaching context, how it is understood by practitioners personally, and as a student learning outcome, and how it can be designed for in practice.

1.3.2 Objectives

The objectives of this study were to:

1. investigate higher education practitioners' views regarding conceptions of creativity, "teaching" and designing for creativity, and the place and value of creativity in learning and teaching;

2. generate examples of creative practice to provide a holistic picture of the complex web of personal, social, cultural, pedagogical and technological factors that shape practice;
3. examine the impact of the technology-enhanced learning (TEL) environment that underpins higher education, where ICTs (information and communications technologies) and delivery mode (face-to-face, blended, and fully online approaches) either contribute to or limit creative processes;
4. develop theory and models of creativity that contribute to fostering and designing for creative learning and teaching in higher education, including learning designs (pedagogical patterns) and design principles.

1.3.3 Research Questions

Three research questions shaped the inquiry:

RQ1: What do educators understand by "being creative" in the context of learning and teaching in higher education?

How is it valued and expressed? What do educators expect when they ask students to "be creative"? What are their attitudes and motivations for this? What is the student response?

RQ2: What lessons can be learnt about fostering and designing for creativity in higher education from educators in the sector and, in particular, from exemplary creative practitioners?

What pedagogical approaches and models do they use? What are the barriers and enablers for creativity in this context? How do their students respond to these creative pedagogies? What learning designs and design principles can be derived from this research?

RQ3: What is the role and impact of technology-enhanced learning environments on the development of creative pedagogies? Do they limit or contribute to creativity in this context?

Are digital technologies (ICTs and delivery mode) significant factors that shape the creative learning environment? What can we learn from teachers and

students about the use or non-use of digital technologies, social media and networking applications in this context?

1.4 SIGNIFICANCE AND SCOPE OF THE RESEARCH

1.4.1 Significance

This research explored several gaps in the literature regarding approaches to fostering and designing for creativity in the context of higher education. The areas where the literature was nascent or provided limited contributions for this research were as follows: (1) the discourse on creativity as a graduate attribute, especially with relevance to cross-disciplinary studies; (2) in-depth models of contemporary creative practice across disciplines in higher education; (3) the new interaction spaces for creativity mediated by digital, networked communications technologies; and (4) the student voice in relation to the experience of being creative in higher education, and within creative groups.

Creativity is fluid and responsive to historical, cultural, social, disciplinary and educational change, so current perceptions of creativity may not be valued similarly at other times. This research is significant, therefore, as it has captured perceptions and expressions of creativity from a cross-section of educators in order to determine its contemporary value, place, expression and pedagogies.

This research makes a significant contribution to the discourse on creativity by inquiring into creativity and raising it as an issue with educators. As education moves from an industrial model which is perceived to no longer be adequate (Robinson, 1999, 2011), to a model, or models, that better meet the needs of students and teachers within the ever-evolving and complex societies in which we now live, the strategic significance of creativity grows. In order to shape the discourse around creativity, educators need to reflect on and evaluate the pedagogies and technologies used in practice. In asking questions of practitioners regarding these issues during my research I have contributed to the debate. The research has prompted conversations that might otherwise not have eventuated and initiated reflection on the efficacy of current models and approaches.

As Barnett (2012) recommends, new research in this domain is important so as to be able to construct a picture of educators' and students' future requirements. This

is critical as educators reconcile issues around competing institutional (Barrie, 2006) and technological (Green, 2002) demands, and tensions between policy-makers' desire for standardisation of the curriculum and the demand for more creative approaches to curricula (McWilliam, Dawson, & Tan, 2011; Sheridan-Rabideau, 2012; Zhang, Zhao, & Lei, 2012).

This study has also contributed to the discourse on creativity by collecting and synthesising the views of a cross section of educators, challenging current conceptions, and making creativity more visible. As in-depth case studies that document creative practice and its pedagogies in a cross-disciplinary context are scarce, the theory and examples that have emerged from this research contribute significantly to the domain. The literature on the "second-generation" student experience of creativity in higher education is also limited, and this research makes another important contribution to the field through the student voices that emerged from the case studies.

There are few documented examples of creativity-based learning designs in the literature; that is, recorded learning design patterns that can be used to share creative pedagogical practice. The models developed here are original patterns and the designs locate creative processes in both text-based and visual formats. These new patterns and the design principles are sharable and adaptable within and across disciplines.

One of the difficulties that higher education practitioners have with creativity is its perceived elusive and complex nature (Jackson, Oliver, Shaw, & Wisdom, 2006; Williams & Askland, 2012). While the literature provides much scholarly support for issues such as curriculum design, assessment, and learning and teaching methods in general (e.g. Biggs & Tang, 2009; Boud & Falchikov, 2007; Ramsden, 2003), the literature that probes more deeply into how to promote, develop and assess creativity in higher education is emergent (but see Fryer, 2006b; Petocz et al., 2009; Reid & Petocz, 2004; Reid & Solomonides, 2007), and there are few substantial resources such as Jackson et al.'s (2006) collection of edited papers. Moreover, although the number of available guides on how to promote creativity in general is increasing (e.g., de Bono, 2008, 2012; Seelig, 2012; Tharp, 2003), along with publications that offer process models to support creative problem solving (e.g. Greene, 2001; Puccio,

Mance, & Murdock, 2011; Seelig, 2012), there is still a requirement for ongoing research into the specific contextual and theoretical issues that impact the development of creativity in contemporary higher education settings. This study makes an original contribution in this domain.

Significantly, this study articulates some of the tacit understandings of creativity that are recognised by exemplary practitioners to foster and reward creativity. Although creativity is often seen as too problematic to be tackled directly (Jackson, 2013a), like other abstract concepts, such as play or learning, this study demonstrates that it is possible, through close examination, to come to a better understanding of the complexities of creativity in the learning and teaching setting. The research provides a snapshot of developments at this time, and evidence from which strategies and policies can be developed to better support educators across the sector.

The research also contributes a point of comparison for earlier studies into creativity. Whereas previous cross-disciplinary research into creativity has focused on the views of outstanding teachers in higher education, such as the 2005 study in the UK (Fryer, 2006a) targeting National Teaching Fellows, and the related Australian study (McWilliam & Dawson, 2007) targeting national teaching award recipients, this study targeted a more general sample of educators from the Australian higher education sector. Fryer (2006a) has commented that further research in this domain is to be encouraged. In addition, this research goes beyond the two previous investigations, including analysis of perceptions regarding the impact of ICTs and delivery mode on creative learning and teaching outcomes, and questions regarding creativity in relation to other cognitive processes.

Of particular interest to this study is the environment in which creativity is promoted. One of the key contributing factors to the context is the plethora of technologies that teachers grapple with as they conduct their daily professional practice and design for creative learning and teaching. These technology-enhanced learning (TEL) environments of higher education provide both limitations and affordances for practitioners. Contextual influences are under researched in relation to the development of creativity in higher education, and this research makes an important contribution to theoretical understanding around this.

1.4.2 Scope

A mixed methods design framed the research, integrating survey, case study and informed grounded theory methods. The methodology was underpinned by a social constructivist paradigm. By using a concurrent mixed methods approach to determine educators' conceptions of and approaches to creativity and, where possible, student responses, a holistic picture of praxis from both general and more detailed perspectives was constructed. By means of an online survey to which 170 educators responded, the general perceptions of teachers, managers, leaders and researchers within the academy were collected and synthesised, and compared with the more specific insights of a select number of exemplary teachers, their tutors and students.

The case studies represented diversity of discipline, pedagogy, context, use of ICTs and delivery mode. The cases were drawn from the creative industries and social sciences, and included creative writing, web interface design, sociology, digital imaging and architecture. Two of the units (subjects) were offered fully online, the others via blended learning methods. Across the five cases a total of 20 teaching staff and 31 students were interviewed, including the unit coordinator for each case, and at least two tutors and three students from the same unit. The cases were analysed using informed grounded theory methods (Charmaz, 2011; Thornberg, 2012).

The survey and the case studies each addressed the three research questions (RQs 1-3). Descriptive and inferential statistical methods were used to distil theoretical findings from the quantitative data, and case study analysis and grounded theory methods were employed for the qualitative data. Table 1.1 summarises the questions, and the data gathering and analysis methods. Data was gathered over two years beginning with the survey in March 2012 and ended with the last case study in December 2013. The case studies were conducted over semesters one and two in 2013.

Table 1.1
Overview of data collection, analysis and research questions

Summary research questions	Participants	Data collection	Data analysis
RQ1: What do higher education practitioners understand by "being creative"? RQ2: What lessons can be learnt about fostering and designing for creativity from educators in the sector? RQ3: What is the role and impact of technology-enhanced learning (TEL) environments on the development of creative pedagogies?	Higher education practitioners, leaders and managers, researchers, teachers and students.	*Survey & case studies.* The latter included interviews, observation and participant observation, pedagogical documents, unit website resources and related social media websites, field notes.	*Survey*: Quantitative descriptive and inferential statistical analysis, and qualitative data analysis using informed grounded theory of selected data. *Case studies:* informed grounded theory

In addition to the survey and case studies I undertook a literature review that focused on three key areas: (1) *Creativity*–notions and expressions of creativity, creativity and cognitive processes, creativity as a learnable capability; (2) *pedagogical models and designing for creativity*–exploration of available models, examples, pedagogical patterns and learning designs, creative leadership, and environmental considerations, such as emergence and ecology; and (3) *technology-enhanced learning*–the impact of ICTs and delivery mode, the context of contemporary learning environments as they influence the development of teachers' and students' creativity, and influences such as personal digital networks, creative virtual groups and communities.

1.5 THESIS CHAPTER OUTLINE

Chapter 1	Moving Creativity into the Spotlight: Introduction
Chapter 2	Light Seeking Light: Literature Review
Chapter 3	Designing for Research: Mixed Methods
Chapter 4	Wot's in a Name? Survey Results
Chapter 5	A Re-Creative Activity: Survey Analysis and Discussion
Chapter 6	Playing to Get Started: Findings and Analysis of the Individual Cases
Chapter 7	Being in Uncertainties: Multi-Case Analysis and Discussion
Chapter 8	The Esemplastic Conversion: Where Diverse Elements Combine into a Unified Whole

In chapter 1 the research problem is introduced. Background issues and drivers for change in the learning and teaching environment that point to the need for the research are summarised, as well as the significance and scope of the study. ***In chapter 2***, the relevant literature is reviewed. This includes theories of creativity, and creativity as a graduate capability; its expression within different disciplines and domains; known pedagogical models for the development of creativity; and the concept of learning design (pedagogical patterns) as a means of representing creative practice. The chapter concludes with a review of contextual elements that impact the development of creativity, in particular the significance of technology-enhanced learning environments.

In chapter 3 the research design is explained and justified. This includes the rationale for the mixed methods approach, and the underpinning social constructivist epistemology. The data collection and analysis methods are clarified, and the use of constructivist informed grounded theory (Charmaz, 2011; Thornberg, 2012) for the analysis of the case studies and selected qualitative data from the survey. The timeline indicating major milestones in the research is found in Appendix B.

In chapter 4 the results from the survey of higher education practitioners are presented. The findings relate to participants' conceptions of creativity, the value of creativity in the professional context, the relationship of creativity to other cognitive processes (critical thinking and problem solving), and participants' perceptions of the impact of delivery mode and information and communications technology (ICTs) on the development of creativity as a graduate capability. The survey results are analysed in relation to the literature in ***chapter 5.***

In chapter 6, the focus moves to the five case studies. The case studies are the heart of the research, and demonstrate the energy and exemplary approaches of creative teachers. A perspective from tutors and students is included with each case study. The cases are presented as individual narratives, and example learning designs (pedagogical patterns), demonstrating creative process accompany each case. ***In chapter 7,*** the cases are then analysed as a multi-case set. The emergent themes derived from the grounded theory analysis and informed by the literature are discussed. Several theoretical models are presented.

Chapter 8 is a synthesis and discussion of all the findings, quantitative and qualitative. The key findings are related to the research questions. An ecological systems model that informs approaches to designing for creativity in higher education is presented, along with twelve design principles derived from the qualitative and quantitative findings. The chapter ends with a summary of contributions to theory, practice and methodology that arise from the research, the implications and limitations of the study, and suggestions for future research. ***References and Appendices*** complete the thesis.

Chapter 2 Light Seeking Light: Literature Review

Light, seeking light, doth light of light beguile;
So ere you find where light in darkness lies,
Your light grows dark by losing of your eyes.

–William Shakespeare, *Love's Labor's Lost,* Act 1, Scene 1

2.1 PURPOSE AND STRUCTURE

The purpose of chapter 2 is to bring together perspectives from the literature that shed light on creativity as a concept, its importance to higher education, and pedagogical models that contribute to fostering and designing for creativity. Research, like any creative endeavour, does not exist in a vacuum: it builds on the work of others. To place this research in context I review the literature around definitions and descriptions of creativity and examine the significance of creativity as a "second generation" capability. I discuss the significance of creativity as a driver for change in education and the economy, and as a social good. I consider creativity in relation to higher education policy directions and graduate capabilities, and investigate relevant theoretical and pedagogical models. Finally I review the literature that offers insight into the impact of technology-enhanced learning (TEL) environments; that is, the technology-rich settings that characterise higher education learning and teaching spaces where creativity may be cultivated. This includes face-to-face, blended and online settings. The chapter concludes with reference to gaps in the literature that led to this research and some closing comments.

2.2 DEFINITIONS, CONCEPTS AND THEORIES

2.2.1 Definitions of Creativity

Creativity as a concept is acknowledged to be elusive and complex, difficult to define and explain (Bleakley, 2004; Jackson & Sinclair, 2006; Morrison & Johnston, 2003; Swirski, Wood, & Solomonides, 2008; Thomas & Chan, 2013). Howkins (2010b) says simply that it cannot be defined, but allows that it can be explained, a position that proves to be consistent with the view of many participants in this study. While contemporary western definitions of creativity generally refer to creativity as

the generation of something new, this has not always been the case in western thought (Runco & Albert, 2010). In the times of the early Greeks and Aristotle it was characterised as a phenomenon associated with mystical powers ("genius"), giftedness or even madness (Albert & Runco, 1999; Runco & Albert, 2010; Weisberg, 2006). As well as newness and originality, current theorists tend to describe the processes of creativity as iterative and dynamic (Kozbelt, Beghetto, & Runco, 2010; Thompson Klein, 1996). By comparison, traditional eastern thinking on creativity has tended to emphasise discovery and matching ideal forms (Runco & Albert, 2010).

Csikszentmihalyi (1997), a leading scholar in the field, defines creativity as "any act, idea or product that changes an existing domain, or that transforms an existing domain into a new one" (p. 28). Csikszentmihalyi (1990) is credited with introducing the term "flow", meaning that state of complete concentration and focus where all creative capabilities are engaged fully in the creative process. His definition of creativity is best suited to creativity attributable to individuals with exceptional talents and gifts. Examples of this kind of domain changing creativity include Darwin's theory of evolution, Curie's research in physics and chemistry, Stravinsky's ballet music, de Beauvoir's contribution to literature and philosophy, Chanel's impact on fashion, and Jobs' and Wozniak's contribution to the world of computing.

Robinson (2001, p. 67), however, simply says that creativity is "the process of having original ideas that have value". Weisberg (2006), unlike Robinson (2011) or Csikszentmihalyi (1997), does not accept that creative output needs to have "value". His argument is that value is contestable, and will be assigned differently by individual critics, peers, generations, social groups and cultures. Nonetheless, he agrees that all creative work is not equivalent, and influence on a field or domain will be variable. Amabile (1982) agrees that creativity is culturally and historically bound (as do Csikszentmihalyi, 1997; Kaufman, Kornilov, Bristol, Tan, & Grigorenko, 2010) and adds that the more outstanding or revolutionary a product of creativity is in its field, the more difficulty experts in the field have finding consensus about the level of creativity. Creative processes and products appear to be "transient across epochs and cultures" (Kaufman et al., 2010, p. 218). This, then, returns to the

argument of value as a definitional component of creativity, and the problem by whose values creativity is to be judged. For Sternberg, Kaufman and Pretz (2002), however, value is an element of the concept of creativity, and to this they add novelty, quality and appropriateness: "Creativity is the ability to produce work that is novel (i.e. original, unexpected), high in quality, and appropriate (i.e. useful, meets task constraints)" (p. 1).

Definitions of creativity reflect the author's background, domain and purpose. For example, Koestler's (1964) definition of creativity as "the defeat of habit by originality" (p. 96) developed for his treatise on creativity, has been a popular definition for some time (McWilliam & Dawson, 2008). Given his literary and journalistic background it reflects his expected concern with language. It is also a useful definition within the context of teaching practice, if one sees that creative teaching is about defeating tried and true habits and taking risks as appropriate to be creative. Yet Sternberg (2012), and choreographer Twyla Tharp (2003) say that creativity *is* a habit, a way of life that can become so ingrained that "one is hardly aware one is engaging in it" (Sternberg, 2012, p. 3).

Williams and Askland (2012) provide another example of a definition of creativity suited to purpose and context from the field of architecture and design. In their study of academic teachers they found that definitions of creativity amongst practitioners varied, such that some emphasised design *methodology*, others the design *product* or *process*, or the *designer*, or the use of *knowledge-based systems* in their definitions. For the purposes of their project, therefore, Williams and Askland developed a more general definition of creativity, as "the development of novel and appropriate solutions to *problems*"(p. 9). Similarly, Swirski et al. (2008) take a pragmatic view of creativity as a graduate capability from the perspective of the discipline of business, and define creativity as "the capability to respond to change by analysing, applying and expanding knowledge". This definition may not be sufficient for those engaged in creativity as artistic expression, but the definition may be appropriate for a number of other higher education disciplines and endeavours.

The discussion above indicates that finding a definition of creativity that meets all needs and contexts is problematic. However, Csikszentmihalyi (1997), Howkins (2010b), Weisberg (2006), and Sternberg (1999) all argue that creativity builds on previous ideas or work: it does not just appear miraculously out of the blue by divine

intervention as was once thought (Albert & Runco, 1999; Runco & Albert, 2010). Howkins (2010b, p. 8) puts it quite simply: “creativity is the use of ideas to produce new ideas”. The notion that creativity assumes originality or novelty is contested by Fryer (2012) who argues that more precision on the nature of the originality observed is required. At the very least, I conclude that the notion of originality, and new ideas, is key to many contemporary definitions of creativity, and that “value” may or may not be assigned to that definition.

Bleakley (2004), however, argues that the term creativity is often used uncritically and reified. He contends that where it is used more specifically it is limited to describing person, product or process. In his view, what is required is a social constructivist reading of “the creative”, so that plural creativities are allowed and context is acknowledged. For this, Bleakley offers a typology of ten different kinds of creativity, claiming that the rough groupings may help inform “educational strategies tailored to context” (2004, p. 466). Bleakley’s typologies of creativity are as follows: creativity as originality and spontaneity, as the irrational, as problem solving and problem stating, as inspiration, as serendipity, as resistance to the uncreative, as withdrawal and absence, as an ordering process (creation as “origin”), and as rhythm and cycle (linked to conservation and renewal).

Bleakley’s conclusions confirm the findings of this review of the literature, that creativity is constructed in many different ways, for different purposes, and finding one definition suited to all contexts is probably not possible. While affirming the value of multiple definitions of creativity, depending on purpose and context, for the purposes of this research I have found Koestler’s definition of creativity at times useful, “the defeat of habit by originality” (1964, p. 96), along with Sternberg, Kaufman and Pretz’s (2002, p. 1) unmusical, but apt definition: “Creativity is the ability to produce work that is novel (i.e. original, unexpected), high in quality, and appropriate (i.e. useful, meets task constraints)”.

2.2.2 Creativity and Innovation

For this research a distinction needs to be made between the terms creativity and innovation, as they are often used synonymously. As Smith-Bingham (2006) notes, the term creativity is usually associated with “culture (especially the arts), business (with respect to the creative industries and entrepreneurship), and education

(as part of the drive for deep learning and personal development that is more than achievement in tests)" (p. 12). Innovation, however, according to Smith-Bingham, is more aligned with notions of delivery and value in business research and development, and the search for new knowledge in science and technology. Howkins (2010b), however, says that, "creativity is internal, personal and subjective, whereas innovation is external and objective" (p. 10). According to Howkins creativity can lead to innovation, but the reverse is not true. Bridgstock, Dawson and Hearn's (2011) conceptualisation of creativity as an individual capacity, compared with innovation which is "systemic output of organisations" (p. 105), however, provides a useful working distinction for the purposes of this research.

2.2.2 Theories of Creativity

There are a plethora of theories about creativity, and these theories can focus on, for example, cognitive, typological, economic or developmental factors, on systems, stages or components of creative process. Kozbelt et al. (2010) have identified at least ten categories of theories of creativity, all of which contain innumerable examples. Theories of creativity will often focus on one or more of four elements: process, product, person and place (or press/pressure) (Rhodes, 1961). These elements are known as the four Ps of creativity. Two other elements have been added to these, persuasion (Simonton, 1990) and potential (Runco, 2003), making six Ps. Different theories emphasise these aspects with less or more weight. Process refers to cognitive processes (e.g. creative thinking versus non-creative thinking); product is the outcome of creativity (e.g. ideas, publications, art works); the person (and their personality and disposition); place (the setting and environment that affect creativity, the pressures); persuasion (creative people may be the ones who influence the direction of creativity in a domain or change the way others think); and potential (the creative potential of, e.g., children who need educational opportunities to be creative) (Kozbelt et al., 2010). This research touches on a number of theories that refer to one or more of these elements, and a selection of these are discussed below. A key concern of this research is how these and other elements interrelate in the educational setting and contribute to the phenomenon of creativity.

2.2.3 Theories of Creativity and Cognitive Processes: A Continuum?

Whether creative *thinking* is a unique form of thinking or a combination of other modes or forms is contested in the literature. For example, Weisberg (2006) argues that problem solving is a subset of creative thinking. For problem solving to take place, the situation must be novel for the person, and the person must devise a sequence of "moves" that changes an unsatisfactory situation ("the problem state") into the desired state (the "goal") (p. 123). Weisberg maintains that the thought processes necessary for everyday problem solving *or* the production of innovations are the same. "There may be no difference in the processes that bring about a great scientific or artistic advance and those underlying someone's making a new salad from leftovers in the refrigerator" (p. xi). He argues that it is a fallacy that those endowed with high levels of creativity operate using "entirely different cognitive processes" (p. 4). However, while the thought processes may be the same in his view, achievement levels are not. He concedes that this is contestable, and a minority view amongst psychologists (at the time of writing). Nevertheless, some scholars conceive creativity as a capacity on a continuum, present to greater and lesser degrees in all of us (Csikszentmihalyi, 1997; Guilford, 1950; Sternberg & Lubart, 1999).

The view that creativity is on a continuum is also relevant when comparing conceptions of creativity across domains, for example the arts versus the sciences. Weisberg (2006) observes that we say that artists *create* their work, but that scientists *make discoveries*. In addition, there may be differences in our beliefs about the relationship between the person and the product in the arts compared with the sciences. The arts, according to Weisberg, are about "the person", are subjective, and suggest that the product would not have existed if it were not for the person who created it. (For example, the novel *Pride and Prejudice* would not have existed if Jane Austen had not written it.) However in science, the object, event or fact waiting to be "discovered" is seen as an objective other. (For example, DNA could have been discovered by anyone (that is, with the insight, skills and knowledge), as DNA would still be there, waiting to be "discovered", but its existence was not reliant on the persons who "found" it, namely Watson and Crick, building on the research of many other scientists before them. Despite the differences in the way language is used to

express creativity in the arts and the sciences, Weisberg proposes that "artistic creativity and scientific discovery are not two separate categories; rather, they overlap in various ways" (Weisberg, 2006, p. 57). This theoretical position represents creativity as a continuum, with arts at one end and scientific endeavour at the other: these are different approaches or expressions of creativity, but one is not less than the other. This conceptual difference between disciplines and constructions of creativity becomes relevant when the survey findings are discussed in chapter 4.

2.2.4 Associative theory

The view that creativity is about making connections, joining disparate ideas or things together to create something new and original has a long history (Russ & Dillon, 2011) and is seen as an important part of modern creativity development (Seelig, 2012). Mednick's (1962) associative theory of creativity presents the argument that *creative thinking* is "the forming of associative elements into new combinations which either meets specified requirements or are in some way useful" (p. 221). According to Russ and Dillon (2011) there is general agreement that by engaging in a "broad search process" (p. 66) many associations are made that help foster creativity.

2.2.5 Convergent and Divergent Thinking

Another cognitive theory of creativity holds that creativity involves both divergent and convergent thinking (supported by Fryer, 2012; Jackson & Shaw, 2006; Puccio et al., 2011; Runco, 2011), and the ability to make judgements about creative ideas (Runco, 2011; Sternberg et al., 2002). Puccio et al. (2011, p. 107) describe divergent thinking as "a broad search for many diverse and novel alternatives" and it includes deferring judgement, generation of many alternatives, making connections and seeking novelty. Convergent thinking on the other hand is "focused and affirmative evaluation of alternatives" (p. 107), and includes applying affirmative judgement (i.e. consideration of the strengths of an option, not just its shortcomings), keeping novelty alive, checking objectives and staying focused. Puccio et al., confirm that periods of incubation are required for both divergent and convergent thinking.

2.2.6 Creative Thinking and Critical Thinking

In the literature on creativity a distinction is made between creative thinking and critical thinking. Vardi (1999) for example, separates the two as thinking to generate ideas (creative thinking) and thinking to evaluate information (critical thinking). Mulnix (2012) a philosopher and teacher of *critical* thinking, notes that critical thinking has become topical in higher education, and observes that "one obvious difficulty with determining whether critical thinking can be taught, or even measured, is that there is widespread disagreement as to what critical thinking actually is or amounts to". There are obvious parallels between Mulnix's observation on critical thinking and exploration of creative thinking as a component of creativity. Mulnix (2012) believes critical thinking is a skill that can be developed through practice, and that "we should be careful not to confuse critical thinking with other thought processes. For example, critical thinking is not equivalent to creative thinking, nor is it equivalent to intuition or emotive response" (pp. 477-478). The consensus on critical thinking provided in the Facione report of 1990 defines critical thinking as: "Purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 1990, p. 2).

Fryer (2012), however, challenges the assumption that the two are separate and argues that both generative and analytical thinking are required for creative thinking (supported by Puccio et al., 2011). "Making a distinction between so-called creative (generative or divergent) thinking and critical (analytical or convergent) thinking can give the misleading impression that creativity requires only idea generation and not analysis, when in fact both are necessary in order to produce creative outcomes" (Fryer, 2012, p. 23).

2.2.7 More than Creative Thinking: A Systems Approach

Creativity as a broad concept is at times conflated with creative *thinking*, but research indicates that creativity needs to be considered as much more than a mode of thinking. As Csikszentmihalyi (2006) argues, creativity is more than a "facile routine of exercises in 'thinking outside the box'" (p. xix). Jackson and Shaw (2006) see creativity as: "originality (working across the boundaries of acceptability,

doing/producing new things, personal invention and innovation); use of imagination in designs to achieve a complex objective; exploration and risk-taking; making sense of complexity and storytelling" (p. 91), all of which involves process and more than creative *thinking*.

In addition, for creativity to be realised, a number of researchers argue that certain critical factors must be present, such as social, cultural and environmental factors (Howkins, 2010b; Sternberg & Lubart, 1999). Csikszentmihalyi (1997) reasons that "creativity does not happen inside people's heads, but in the interaction between a person's thoughts and a sociocultural context. It is a systemic rather than an individual phenomenon" (p. 23). This position is premised on the argument that creativity "cannot be understood by looking only at the people who appear to make it happen" (p. 6), rather, it is the interrelation of three elements: the *person*, the individual who operates in a *domain* of "symbolic rules and procedures" (p. 28) within a culture, and the *field* which includes experts who "act as gatekeepers to the domain" (p. 28). These gatekeepers make judgements about creative work in its tangible or intangible forms. This characterisation of creativity as a systems model firmly situates the phenomenon in the social world. It is particularly useful for this research where I have sought to understand creativity in the social world of learning and teaching.

2.3 THE SIGNIFICANCE OF CREATIVITY

2.3.1 Second Generation Creativity

Given the increased interest in creativity research, the notion that creativity is confined only to individuals with exceptional talent, i.e. "first generation creatives", big-C, or "high creativity" individuals (Craft, 2001, p. 46) is challenged by many researchers (e.g. Craft, 2006a; de Bono, 2012; Eisner, 2002; Herbert, 2010; Jackson & Sinclair, 2006; Kazerounian & Foley, 2007; McWilliam & Dawson, 2008; Robinson, 2011; Seelig, 2012). There is evidence that students can develop creativity and that creativity can be designed for in higher education curricula. Craft (2001) and McWilliam and Dawson (2008) call this small "c", "little c", or "second generation" creativity. McWilliam and Dawson's view, for example, is that most students have the potential for creative ways of thinking and doing, of engaging in creative

processes and generating creative products, individually, and collaboratively. They argue that developing students' creativity along with higher order thinking skills is core business for universities; it is not merely a peripheral or optional activity. While in the past creativity may have been a luxury for a few, with the impact of rapidly changing technology, and the intensified effect of globalisation and specialisation of knowledge, creativity is now a "necessity for all" (Csikszentmihalyi, 2006, p. xviii). This view of creativity as a second generation capacity is central to the inquiry of this thesis.

Kozbelt, Beghetto, and Runco (2010) refine the terminology further in the second generation creativity category. Referring to these "levels of creative magnitude" (p. 23) they add two more categories. The set, in order of magnitude, includes the following: *mini-c* creativity, which is subjective, personal, internal, emotional creativity, e.g. sketches in a student's notebook, (identified by Beghetto & Kaufman, 2007; Kaufman & Beghetto, 2009); little-c creativity, which is objective, creativity of everyday life, e.g. cooking an interesting meal for an audience of family and friends; Pro-c creativity, which includes professional level creators, such as the exemplary teachers interviewed in this research; and Big-C creativity, hi-C or first generation, eminent creatives, such as Charles Darwin or Simone de Beauvoir. To this, Lassig (2012) adds a fifth category, ed-c, which she reserves for educational creativity for learning and achievement within formal learning contexts; this also sits within the second generation spectrum.

2.3.2 The Creative Economy and Creative Ecologies

As well as initiatives in education, the arts and the creative industries, global imperatives have increased general interest in creativity. Rapid developments in science, commerce, industry, the arts and technology mean that change is ubiquitous and ever present. Increasing global economic competitiveness, for example, has led to the rise of the "creative economy" and the so-called "creative classes" (Florida, 2002; Howkins, 2010b). There is now "a rich mix of ecological factors" generating "creative ecologies" (Howkins, 2010b, p. 4), places where creativity thrives because the relationships amongst people in such ecosystems and environments are ideal. These ecologies are characterised by "diversity, change, learning [and] adaptation" (Howkins, 2010, p. 4). The more fertile the niche, the more creativity is likely to

emerge. Managing these dynamic ecologies requires creative approaches to leadership (Puccio et al., 2011; Zacko-Smith, Puccio, & Mance, 2010), and administrative and organisational support, factors that are recognised not only in Australia but also internationally (e.g. Ministry of Education Republic of China, 2003).

In their critique of the creative economy, Hearn and Bridgstock (2010) argue that modern economies now "depend on innovation" and creativity (p. 94), and that new knowledge is at the heart of innovation. However, one of the many challenges we face in a world overloaded with information is "how to integrate our current ideas about creativity into our understanding of information" (Howkins, 2010b, p. 3). How do these phenomena best combine in these new emerging ecosystems, and are universities preparing graduates with the capabilities needed to learn and be creative in this context? Hearn and Bridgstock conclude that we need graduates who can generate fresh ideas and knowledge, are adaptable, capable of working in cross-disciplinary teams, and responsive to changes in technology. As Swirski, Wood and Solomonides (2008) observe, those graduates who have these creative capabilities, "have the self-efficacy to expand and express their learning" (p. 318). Creativity is perceived as an enabler of further learning, a view congruent with that of exemplary practitioners (see chapters 6 and 7).

While there is increasing concern for developing creative capacity in society as a whole, and within education in particular (e.g. Craft, 2001; Sternberg, 2007), Smith-Bingham (2006) cautions against the rhetoric and hype that clusters around this discourse, which has, in his words, led to the "dominance of the innovation agenda" (p. 10). Nonetheless, Smith-Bingham encourages these disputes and conversations, and observes that the role of creativity as a "prized asset" in this context "rests on its potential to provide insight, make new connections, identify potential solutions and communicate them" (p. 11).

2.3.3 Ontological Views of Creativity

While economic arguments for the promotion of creativity as a driver for innovation and entrepreneurship proliferate (Araya & Peters, 2010), along with commentary on its development within society (Florida, 2002), alternative perspectives counter more instrumental, market-driven views of knowledge and

creativity. Rooney (2010), for example, calls for a more nuanced approach in valuing creativity in the modern economy, arguing for "creative wisdom" as an objective of education. From this perspective, creativity is an enabler that links wisdom, values and ethics, and leads to social renewal and transformation. It goes beyond teaching students to have creative ideas: "It has to assist students in dealing with the politics and discursivity of being creative, and in evaluating the creativity of others" (Rooney, 2010, p. 197). Anna Craft (2006b) calls for "creativity with wisdom" arguing that creativity is not value free, and that we need to guard against "cultural blindness" and "environmental disregard" (p. 346) in our attempts to nurture creativity. Barnett (2012) takes the argument further, seeing creativity not only as an important element of future knowing and learning, but *of* wisdom. He poses the question: "How do we learn for an unknown future?". In a fragile world of "supercomplexity", where skills and knowledge are not enough, where all knowledge is contestable, students will need to be comfortable with "knowing-in-and-with-uncertainty", and have developed the capacity for "creative knowing" in order to "be" in the future (p. 69).

Importantly, Csikszentmihalyi (1997) reminds us that "most of the things that are interesting, important, and *human* are the results of creativity" (p. 1), and this alone is reason enough to study creativity, and learn from those who excel in their domain. Csikszentmihalyi (1997) argues that the study of creativity provides "exciting models for living" (p. 11), and knowledge of creativity can contribute to making our lives "more interesting and productive" (p. 10). He also contends that as a result of applied creative thinking, solutions to serious world problems, such as poverty, overpopulation and climate change, may well be found. UNESCO (1996) realised this two decades ago, foreseeing the role that creative development could play in empowering populations to a better life in underdeveloped and developed countries.

2.4 CREATIVITY AND HIGHER EDUCATION

2.4.1. Creativity and Policy Directions

There is a vision for creativity and innovation in Australian higher education expressed at the highest levels. The strategically significant Bradley report on higher

education (Bradley, Noonan, Nugent, & Scales, 2008) noted that if research and innovation were to play a "pivotal role in Australia's international competitiveness and ongoing prosperity" (p. 11) then students needed opportunities and space to develop capabilities that foster creative and innovative modes of inquiry and knowledge production throughout the course of their studies. This echoed recommendations made in the UK Dearing review of higher education (National Committee of Inquiry into Higher Education, 1997) and other international reports on the promotion of creativity (European University Association, 2007; Niu, 2006; Smith-Bingham, 2006). The creativity agenda was also taken up in the K-12 sector in Australia via the Gonski Review of School Funding (Gonski et al., 2011) and the national K-12 schools curriculum (ACARA, 2012). Underpinning these affirmations and aspirations are various national statements committing to creative education for all citizens (e.g. Australian Government, 2013).

While these government reports have rhetorical value, in Australia there is evidence of a certain amount of practical Commonwealth support for a more "imaginative curriculum" (Smith-Bingham, 2006, p. 17) through the funding of cross-institutional projects that focus on creativity or creative teaching, either directly or indirectly. Examples include: (1) *Assessing Creativity, Strategies and Tools to Support Teaching and Learning in Architecture and Design* (Williams & Askland, 2012), an ALTC funded project, which investigated the problem of assessing creativity from a discipline-based perspective; (2) the *Studio Teaching Project* (Zehner et al., 2009) concerned with a number of learning and engagement issues, amongst which creativity figured highly; (3) the *Ingenium* project (University of South Australia, 2012) that created an online creative problem solving tool for students; (4) the *Learning in Networks of Knowledge (LINK)* project (Allen, 2011), a fellowship where the author explored new approaches to learning and teaching via the Internet; (5) an Australian Research Council (ARC) funded project inquiring into creativity from a philosophical and trans-disciplinary perspective (University of Tasmania, 2012); and an Office of Learning and Teaching (OLT) seeding project led by Victoria University to build a creativity skills MOOC (Victoria University, 2013). The effectiveness of these projects, however, relies on issues of sustainability, and long-term diffusion of the outcomes across higher education remains an ongoing problem.

International projects and reports demonstrate a similar level of interest across educational sectors, the intention being the promotion of creativity often with the goal of economic innovation in mind. These include reports from the United Kingdom (Department of Culture Media and Sport, 2008; Fleming, 2008; Loveless, 2007), USA (Parsad, Spiegelman, & Coopersmith, 2012), Japan (Niu, 2006; Shaheen, 2010), Hong Kong (Hong Kong Education Commission, 2000; Leong, 2014) and Taiwan (Ministry of Education Republic of China, 2003). Paradoxically, however, while western education is demanding more flexibility, ambiguity and risk taking to develop creativity in the curriculum, concurrently there is pressure to move towards standardised curricula and increased testing in order to improve competitiveness with large emerging economies (Sheridan-Rabideau, 2012). The two agendas create tensions for curriculum developers and educators. By contrast, countries like China, Singapore and Taiwan are moving to free up their curricula, reducing testing and conformity, and increasing creative opportunities for students in order to better compete with Western cultures (Zhang et al., 2012).

Evidence from other post-secondary fields of education indicates that creativity is perceived as essential for the development of core capabilities within organisations. Allen (2009), and Allen and Gerras (2009), for example, argue that creative thinking is a vital component of strategic thinking and effective leadership for the military. Creative thinking is a skill required to address open-ended and non-routine questions, particularly where circumstances continually change. However, to enable an acceptance of more creative approaches, cultural change within the organisation is required to allow for changes to education and training. (This is discussed further in sections 2.5.4 and 2.5.5.) Further, as Csikszentmihalyi (1997) and Howkins (2010b) maintain, creativity manifests itself within a social context; it is not only about the individual in isolation. Consequently, curriculum change needs to be implemented in parallel with cultural change: none of which is easy, as Phillips, McNaught and Kennedy (2012) confirm. But as Robinson (2011) concludes, the "social and economic revolution" (p. 4) underway is comparable in magnitude to the industrial revolution, and it will be necessary for all learning organisations to address curricula and cultural change. The old educational model is no longer adequate. Add to this the impact of rapidly changing digital technologies, and the efficacy of the old model is seriously challenged: creative solutions are required.

2.4.2. Creativity as a Graduate Capability

Australian universities commonly list creativity, either explicitly or implicitly, as a graduate capability (see examples, Appendix A). Barrie (2007) defines graduate capabilities, also known as generic skills and graduate attributes, as "the skills, knowledge and abilities of university graduates, beyond disciplinary content knowledge, which are applicable in a range of contexts and are acquired as a result of completing any undergraduate degree" (p. 440). Examination of university websites indicates that this definition applies at postgraduate as well as undergraduate levels. Following a review of the literature relating to graduate capabilities, Bosanquet (2011) argues that university statements about generic attributes fall into four categories: capabilities for employability, lifelong learning, "preparing for an uncertain future" and "acting for the social good" (pp. 103-104). However, these generic capabilities are typically difficult to embed in curricula and institutional contextual factors often complicate efforts to do so (Barrie, 2007; Green, Hammer, & Star, 2009; The National Graduate Attributes Project, 2009). Factors such as increasing student numbers, casualisation of "front-line teaching staff" and "the way we measure and reward good teaching" are of particular concern (Green et al., 2009, p. 17). However Bowden, Hart, King, Trigwell and Watts (2000) contend that when these qualities are embedded and contextualised within disciplinary knowledge they are more likely to be achieved.

The literature specifically relating to creativity indicates similar findings. It is reported that educators have difficulties embedding creativity as a graduate capability where they are not clear about how creativity might be expressed in their discipline, developed in their own teaching, or measured and assessed in students' learning (Bridgstock, 2009; Fryer, 2006a; Jackson, 2006b; Jackson, 2010; McWilliam & Dawson, 2007, 2008; Oliver, 2011). As Jackson (2006b) observes: "our problem is not that creativity is absent, but that it is omnipresent . . . it is taken for granted and subsumed within analytic ways of thinking that dominate the academic intellectual territory" (p. 3). I suggest one reason for this is that creativity is associated with the affective domain, and because the culture of higher education affirms "a model of the student and theorisations of pedagogy that downgrade the affective domain in learning" (Beard, Clegg, & Smith, 2007, p. 236), so the presence

and relevance of creativity to the discourse is minimised. Consequently, while teaching has long been acknowledged to be a creative endeavour (e.g. Dewey, 1910; Freire, 2005; Jackson, 2006b; Wisdom, 2006) the discourse around creativity in higher education is not well advanced (Swirski et al., 2008). However, it is important for teachers' concepts in this domain to be articulated in order to develop and share pedagogical practice. Given that the production of new knowledge through research is a core objective of higher education, and that the activity is a creative one, there is good reason to discover more about the pedagogies and practices that relate to it and the contexts that support it. In addition, government regulatory requirements from TEQSA[1], AQF[2] and the Commonwealth Department of Education[3] mean that universities must certify and assure that they "provide for appropriate development of key graduate attributes" (Department of Industry Innovation Science Research and Tertiary Education, 2011), including those that relate to creativity, with a view to improving student employability on graduation.

As a result of the lack of dialogue about creativity amongst higher education practitioners and policy-makers, the tendency in some fields has been to avoid explicitly addressing the issues regarding designing for and assessing creativity, and settling for "tick the box" compliance (Kleiman, 2004). This view is born out in the ALTC[4] report on *Assuring Graduate Outcomes* (Oliver, 2011). Following a national review of university statements about generic capabilities, seven capabilities common to most Australian universities were distilled and published on the project website as follows:

> Written and oral communication; critical and analytical (and sometimes creative and reflective) thinking; problem-solving (including generating ideas and innovative solutions); information literacy, often associated with technology; learning and working independently; learning and working

[1] Tertiary Education Quality and Standards Agency, http://www.teqsa.gov.au/

[2] The Australian Qualifications Framework, http://www.aqf.edu.au/

3 http://education.gov.au/

4 Australian Learning and Teaching Council (ALTC), since replaced by the Office of Learning and Teaching (OLT): http://www.olt.gov.au/.

> collaboratively; and ethical and inclusive engagement with communities, cultures and nations. (Australian Learning and Teaching Council, 2014)

From this list it appears that creativity falls into two categories: thinking skills and problem solving capabilities. A scan of Australian university websites confirms this divide (see Appendix A). So while according to Oliver (2011) universities are beginning to be more specific about which of the generic outcomes are "developed" or "fostered", and more importantly "which ones are assessed" (p. 2), measuring generic graduate capabilities remains contentious, and there is little sector-wide agreement on the indicators for many of the capabilities, including creativity and its sub-set–creative thinking.

Swirski et al. (2008) contend that in order to develop creativity as a graduate capability, higher education needs to be positioned as a "community of practice" (p. 1), providing a context for dialogue amongst practitioners. By engaging in regular and passionate dialogue, definitions and frameworks can evolve. Walker and Gleaves (2008) confirm the critical need for a language and vocabulary in this domain. Given that communities of practice are "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger, McDermott, & Snyder, 2002, p. 4), this may well be a way forward in order to promote the discourse that seems to be lacking around concepts and definitions of creativity. As with all communities and networks, however, the issues of viability and sustainability remain problematic (Philip, Lefoe, O'Reilly, & Parrish, 2007).

Therefore, while Oliver's (2011) report on graduate capabilities indicates that creativity can be mapped across the curriculum, this is not uniformly undertaken in all universities. Increasingly, though, generic guides or toolkits appear that provide assistance for academics engaging in creative teaching, and teaching for creativity (Griffith Institute for Higher Education, 2011; Macquarie University, 2013; Swirski et al., 2008). However, in order to go beyond "compliance" as it relates to creativity, educators need evidence about what creativity means in context so as to develop their understanding of the concept. In addition, creativity must be assessed and measured, however thorny and difficult that task may be. More research about how

to achieve this effectively in practice is timely, and the findings of this research contribute insights into these issues.

2.5 DESIGNING FOR CREATIVITY: PEDAGOGICAL MODELS

2.5.1 Pedagogical Models

There are now compelling reasons to focus more closely on creativity, as the previous discussion indicates. While the literature has grown considerably since the 1950s (in western psychology), evidence of research in this domain dates back at least to the 1880s (Plucker & Makel, 2010). For many in higher education, creativity is still a contestable notion, and designing for and assessing creativity present "major challenges" to the academy (Walker & Gleaves, 2008, p. 52; see also Ball, 2010). According to Anderson and Krathwohl's (2001) revised taxonomy of Bloom's learning outcomes, creativity is the most complex of cognitive tasks that educators can ask of students, so it is not surprising that it presents issues. While some researchers explicitly confirm that creativity can be taught (e.g. Scott, Leritz, & Mumford, 2004; Zhang et al., 2012), others are more tentative and grant that it can be learned, fostered, nurtured, or allowed for (Baillie, 2002; Biggs & Tang, 2009). Bleakley (2004) is more sceptical, saying that "the creative" (p. 467) can be constructed and legitimated in many ways, so we are better off "teaching *about* kinds of creativity" (p. 467), rather than trying to "teach" creativity. Further, McWilliam (2007), a strong advocate for the key role of creativity in educational practice is somewhat ambivalent on this point. McWilliam argues that thinking and application skills can be taught but there are other aspects of creativity that are not teachable. Clearly this is contestable ground in the literature, and in the findings that emerged from this research. Whatever the answer, Jackson (2006b) observes that teachers' creativity and creative processes "are largely implicit and rarely publicly acknowledged and celebrated" (p. 4). Part of the work of this research was to articulate current constructs, and elucidate implicit and tacit pedagogical approaches of exemplary and creative educational practitioners.

To improve our understanding of creativity in higher education educators need to elaborate what they mean by creativity and how it is operationalised within disciplines (Jackson & Shaw, 2006). The arts, humanities and creative industries

have much to offer in terms of learning and teaching approaches from which insights can be gained and pedagogical models derived (Eisner, 2002; Fleming, 2008; Loveless, 2007; Robinson, 2011). In addition, researchers in science education (Barrow, 2010; McWilliam, Poronnik, & Taylor, 2008), engineering and IT (Baillie, 2002; Kazerounian & Foley, 2007), business (Petocz et al., 2009; Swirski et al., 2008; Turnbull & Eickhoff, 2011), and design and architecture (Williams & Askland, 2012) offer practical and theoretical guidelines for practitioners.

An example of a discipline-based model is that of Kazerounian and Foley (2007) for engineering. The authors synthesised a set of ten maxims for enabling conditions for creativity. The maxims are: (1) keep an open mind; (2) tolerate ambiguity and teach students to tolerate the discomfort of searching for answers; (3) allow time for iterative process that includes idea incubation in four stages: "preparation, incubation, illumination, and verification" (p. 764); (4) reward creativity; (5) lead by example; (6) accept learning to fail: "mistakes can lead to deeper topic understanding and innovation" (p. 764); (7) encourage risk; (8) search for multiple answers; (9) promote internal motivation, which comes from relevance and meaning in the tasks; and (10) ensure ownership and control of learning (e.g. provide choice in project topics).

Important to achieving successful creative outcomes is advice from researchers and practitioners to treat creativity as a habit (Sternberg, 2007, p. 3; Tharp, 2003). Sternberg (2007) argues, "It may sound paradoxical that creativity–a novel response–is a habit–a routine response. But creative people are creative largely not by any particular inborn trait, but rather, because of an attitude toward life: they habitually respond to problems in fresh and novel ways, rather than allowing themselves to respond mindlessly and automatically" (p. 3).

2.5.2 Stage and Component Models

While scholars such as Csikszentmihalyi (1997) and Robinson (2011) provide similar guidelines regarding the conditions for promoting creativity based on studies of highly creative individuals, there are also numerous process models of creativity, many of which relate to problem-solving. Gelb (1996) produced a popular five-stage model, which includes the following sequence of stages: preparation, generation, incubation, evaluation and implementation. This is based on an earlier model by

Wallas (1926) (preparation, incubation, illumination, and verification). Plsek (1996) synthesised eight discrete stages for his Directed Creativity Cycle (observation, analysis, generation, harvesting, enhancement, evaluation, implementation, and living with it), while Greene (2001) discovered an astounding forty-two models of creativity to which he added his own Four Cycle Model.

Alternative design-based models that work on problem finding and problem resolution relate to design thinking, and take the following form: (1) empathise with the people and the problem, (2) define the problem, (3) ideate, that is, generate many ideas and choose amongst them, (4) prototype (make a model), (5) test the model, and repeat iteratively till a suitable and valuable solution is achieved (Institute of Design, n.d.). Other scholars and practitioners offer models based on *components* said to contribute to fostering creativity. Seelig (2012) for example, provides a model comprising six components required for individual or group creativity. This is her "innovation engine" and includes knowledge, imagination, attitude, habitat, resources and an enabling culture. The first three components are internal or personal, and the last three are external to the creative person. Fryer (2012), however, warns that all these models should be critiqued for their underlying assumptions (e.g. about the search for novelty).

2.5.3 Creativity Training Programs

Various educational institutions, organisations and professions have taken up creativity "training" as a means of fostering creativity (Scott et al., 2004). This includes fields such as marketing and business, educational administration, medicine and engineering. The term "training" is used by Scott et al., (2004) to include both narrowly focused skill-based creativity programs (sessions of as little as one hour), and broader knowledge-based, affective transformational educational programs running over weeks or several semesters. As Scott et al., affirm, training is only one approach amongst many for fostering creativity, and from their review of the literature they determined that other strategies might also be valid. Such strategies include providing "effective incentives for creativity", enabling the "acquisition of requisite expertise", structuring group interactions to more effectively encourage creative processes and output, optimising "climate and culture" to support creativity, and identifying "career development experiences" that build capability (2004, p.

361). From their meta-analysis of seventy training evaluation studies, the authors concluded that well-designed creativity training programs are effective, with regard to certain performance criteria. All characteristics of creativity are not necessarily evaluated in these programs[5] and some have a K-12 school focus rather than a higher education focus (e.g. Rose & Lin, 1984; Torrance, 1972). However, the most successful programs focus on developing cognitive skills and "heuristics involved in skill application" along with practice using challenging real-world exercises, "relevant to the domain at hand" (p. 383). In addition, while cognitive approaches are valuable, other approaches may also have value, and how the training is delivered will have bearing on the success of the program.

Creativity training programs potentially differ in three main areas (Scott et al., 2004): whether or not they emphasise domain specificity; employ substantive models (e.g. De Bono's (2012) lateral/parallel thinking/six hats model, or Seelig's (2012) innovation engine model); and underlying metatheoretical assumptions (e.g. giving emphasis to cognitive processes, dispositional or motivational characteristics, or environmental influences). Examples of successful HE modules, units or courses which specifically aim to foster or "train for" creativity development include the Australian Technology Network (2015) creative and critical thinking, online module for higher degree research students; Fryer's (2006b) undergraduate and postgraduate creativity modules; and full programs or single courses from SUNY Buffalo State (2015), Stanford Online (2013; 2014), and the University of Malta (2015).

Scott et al. (2004) provide useful guidelines for "creativity training", and the above examples follow these to varying degrees:

> First, training should be based on a sound, valid, conception of the cognitive activities underlying creative efforts. Second, this training should be lengthy and relatively challenging with various discrete cognitive skills, and associated heuristics, being described, in turn, with respect to their effects on creative efforts. Third, articulation of these principles should be followed by illustrations of their application using material based on "real-world" cases or

[5] For example, a typical test of divergent thinking might be confined to scoring "fluency (number of responses), flexibility (category shifts in responses), originality (uniqueness of response), and elaboration (refinement of responses)" (Scott et al., 2004, p. 363).

> other contextual approaches (e.g. cooperative learning). Fourth, and finally, presentation of this material should be followed by a series of exercises, exercises appropriate to the domain at hand, intended to provide people with practice in applying relevant strategies and heuristics in a more complex, and more realistic context. (Scott et al., 2004, p. 383)

In summary, this suggests that creativity programs need to be targeted. Programs should be domain relevant, as well as structured and challenging. Rather than one-shot training activities, longer courses, implemented in authentic and increasingly complex environments may be more effective.

In terms of achievement, however, providing opportunities for creativity is not enough. Achievement may vary according to disposition as Lassig's (2012) study of adolescent creativity indicates. Those with "lower" creative dispositions in a domain require more support to achieve creative outcomes than those with "higher" creative dispositions. Lassig's study also demonstrates that those with high creative dispositions are more able to overcome difficulties in the pursuit of creative outcomes. It is reasonable to conclude that this may be the case for higher education students.

2.5.4 Creative Environments and Emergence

As the previous discussion indicates, while guidelines and models are important, educators need to consider a more contextualised, holistic approach when the aim is to foster creativity (Csikszentmihalyi, 1997; Scott et al., 2004; Seelig, 2012). Climate, culture and the domain are important. While higher education institutions cannot help but be creative because they are full of capable and creative people (Tosey, 2006), real and perceived barriers to implementation and cultural change cannot be ignored. As Tosey (2006) explains:

> There has never been a greater apparent need for creativity at all levels of the system in order to accomplish complex change . . .Yet the spaces for emergence in HE currently seem ill-matched to the issues of change that appear most urgent to address. Various features of HE, such as mechanisms for the maintenance of quality and standards, often appear to inhibit emergence and sit in tension with creativity. (p. 29)

Tosey also observes that the structures that may inhibit the development of creativity in universities are, paradoxically, themselves the products of creativity. To add to this, constraints and boundaries are key conditions for the emergence of creativity (Csikszentmihalyi, 1997; Tosey, 2006; Weisberg, 2006). According to proponents of complexity theory (e.g. Stacey, 2000; Waldrop, 1992), in an uncertain and changing world, organisations need the capacity to operate at the "edge of chaos" (Waldrop, 1992) in order to be creative and adaptive. Employees need sufficient room to be imaginative and creative, but have sufficient constraints to enable process and outcomes. Creativity emerges where management is not about command and control, but rather where diversity is encouraged, and an "emergent" paradigm is followed (Tosey, 2006), and there is sufficient organisational support and reward for employees to remain motivated to take risks (Amabile, 1996; 1998).

Johnson (2001) defines emergence as "the movement from low-level rules to higher-level sophistication" (p. 18). Emergent systems are complex and there are "multiple agents dynamically interacting in multiple ways" (p. 19). Emergence is the phenomenon where coherent patterns of behaviour "can arise from the apparently idiosyncratic interactions of random individuals" (Tosey, 2006, p. 32). Seel (2006) maintains that emergence "cannot be controlled, predicted or managed" (p. 1), but is key to "fundamental change in human organisations" (p. 1). While the term was used over a century ago, it was not until the 1990s that a theory of emergence emerged (see Lewin, 1993; Waldrop, 1992). Seel (2006) offers seven conditions for the facilitation of emergence in organisations such as universities as a means of dealing with change that can contribute to, and be the result of, creativity. They include: connectivity (not fragmentation) in all things, diversity (of all kinds), suitable rates of information flow across the organisation, containment of anxiety, well managed leadership (proportionate power), maintenance and care of identity, provision of good boundaries (not too many, not too few), intentionality (a compelling vision to take the organisation or group forward), positive emotional space, and periods of incubation (watchful anticipation). These conditions may help foster creativity, but as universities often tend to use their creativity to converge and control (Tosey, 2006) conflicts of interest can arise.

2.5.5 Creative Leadership

Amabile (1998) confirms that managerial practices affect creativity and she argues that six elements affect the emergence of creativity in the workplace. These elements can be applied to HE learning and teaching contexts. They include the following: challenge (which should be neither overwhelming nor under stimulating); freedom in how tasks are completed–but not necessarily the selection of tasks; provision of sufficient and suitable resources; promotion of the positive features of work-groups and colleagues; encouragement from supervisors; and organisational support. When these conditions are met creativity is more likely to flourish and be valued. This view is complementary to Seel's (2006) conditions for emergence. If the promotion of creativity is perceived as more than developing generic skills, and more holistically about the whole culture, environment and context, then, as Csikszentmihalyi (1997) suggests, creativity can emerge in practice, not only in policy.

If managing these elements is key to the emergence of creativity, then creative leadership will impact success. Creative leadership is essential for dealing with change and complexity (Puccio et al., 2011; Zacko-Smith, et al., 2010). Puccio et al., (2011) view creativity as a core leadership quality. (Compare this with McWilliam's argument for creativity as a core teaching capability.) Puccio et al., argue that creative leadership, like creativity itself, can be developed: it is not an innate skill, although some will demonstrate higher skill levels. The more the attributes of creativity and creative cultures are fostered, the more likely effective leadership will be manifested. Creative leadership can be considered to be important at the macro level of HE institutional practice, as well as at the micro level of creative teams where students engage in creative work. Effective creative leadership is important for both contexts.

2.5.6 The Role of Play

The role of play as an important element of creativity is confirmed in the literature (Berkowitz, 2010; Csikszentmihalyi & Bennet, 1971; McWilliam, 2007; Russ, 2003; Russ & Christian, 2011). Huizinga (1955) defines play as:

> a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted as binding, having its aim in itself and accompanied by a feeling of tension, joy and the consciousness that it is "different" from "ordinary life". (Huizinga, 1955, p. 28)

Csikzentmihalyi and Bennet (1971) argue that play is separate to the everyday, constrained by time and place, where "the player can abandon himself [or herself] to the process, acting without self-consciousness" (p. 46). Evidence from research with young children indicates that play facilitates divergent thinking and insight (Russ, 2003), "the opportunity to explore new combinations of ideas", to see new solutions to problems, and to develop flexibility of thought and associative fluency (p. 238). In addition, Russ and Christian argue that play has an important emotional component, and conceive of "playfulness" as an imaginative disposition that allows the individual to interact in a light-hearted manner with their environment. Playfulness is related to "positive mood, persistence, approachability, and adaptability"(Russ & Christian, 2011, p. 241). Russ and Christian determined that modelling and prompting can facilitate children's *ability* to play, and Dansky (1999) concludes that, over time, facilitation of play increases children's imaginativeness in play. Although this research is based on children's play, other researchers conclude that adults benefit from opportunities to play (Welling, 2011), and if *facilitation* of play pays dividends then there is a role for teachers in this. It is also interesting to consider the question asked by Russ (2003) as to whether or not different *types* of play facilitate different types of creativity.

The role of play in higher education is possibly undervalued. At the very least the role of emotions and the affective domain in higher education may be under researched (Beard et al., 2007; Rowe, Fitness, & Wood, 2013). Yet there is evidence from Rowe et al. (2013) that positive emotions, often associated with play, have a role in contributing to successful *learning* outcomes, that they extend social and cognitive functioning, and that a balance of high and low states of emotional arousal are needed to learn. Further, van Loon (2014) argues for the role of play in the development of discipline-based skills (e.g. creative writing, drama, education, media) and as part of the research endeavour.

Play is also the foundation for *role play*, a creative activity of particular interest to this study as it is elaborated in case 5 (see chapter 6). Role play has been acknowledged as a way to focus students' critical engagement with subject content and disciplinary thinking, while at the same time building students' generic capabilities around collaboration, participation, reflection, and responsiveness to the complexities of human behaviour (Beidatsch & Broomhall, 2010; Higher Education Research and Development Society of Australasia, 1997). It is complex and usually based on activities that reflect real world (authentic) scenarios. I argue that creativity is a necessary requirement of role play, as participants imagine and construct themselves as characters in a story, and empathise with a particular person's worldview in order to enact and achieve a certain outcome. The design of a role play also requires considerable creative input by the teacher as designer, and facilitation is key (see e.g. Beidatsch & Broomhall, 2010; Bolton & Heathcote, 1999; Dracup, 2008; van Ments, 1999). In recent years developments in online role play, also known as role-based elearning, have added to the scholarship in this challenging and rewarding area of creative learning and teaching (see e.g. Wills, Leigh, & Ip, 2011; Wills et al., 2009).

2.5.7 The Role of Reflection and Mentoring

The role of creativity as an integral component of effective learning is acknowledged in the literature (Boud, 2010; Dewey, 1910; Freire, 2000; Freire & Macedo, 1995; Schon, 2011; Torrance, 1995). The key role of reflective practice for the development of creativity is similarly recognised (see e.g. Burnard, 2006; Chivers, 2003; Craft, 2006a). Dewey defined reflection as:

> Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends . . . a conscious and voluntary effort to establish belief upon a firm basis of reason. (Dewey, 1910, p. 6)

It is the "conscious" nature of reflection that is important, and its "persistent", ongoing use, as a means of generating new ideas and explanations from previously held beliefs. Schon (2011) conceptualises reflection as the process of continuous learning, where critical reflection during and after an experience is activated in order

to solve problems: a position confirmed by Freire (2000). This is particularly important in the pursuit of creative endeavours where problems are messy and less than straight forward. Schon's terms, "reflection-in-action" (thinking while doing), and "reflection-on-action" (thinking retrospectively), refer to that reflective conversation when working through "unique and uncertain" situations, such as those that typically characterises creative activities. Reflection, which requires both convergent and divergent thinking, "fosters awareness of the known and the unknown" (Schon, 1991, p. 130).

Reflection and mentoring go hand in hand. The teacher's role is a facilitative one with regard to student reflection and the development of creativity. The teacher can help the student frame and reframe the problem, and encourage new insights and constant evaluation in a spiral-like process (Schon, 1991). For this to take place, time and space are required, a flexible curriculum, and an institutional climate that "encourages and values critical reflection and personal development of both staff and students" (Wisdom, 2006, p. 195).

In addition, for reflection to take place in technology-enhanced learning spaces, educators need awareness of the constraints and affordances of the learning environment and the technologies. Kim et al. (2009) see this learning context as "a whole new interaction space", where "multi-level communication technologies" (p. 13) open up possibilities for collective reflection activities and interaction in many forms. They believe that it is possible to support "deep learning" (p. 13), student self-reflection, group reflection and teacher-supported reflection in these new virtual spaces. However, for online personal and group reflection even more planning is required than for traditional face-to-face classroom learning environments (Kim et al., 2009; Mason & Rennie, 2008; Philip & Nicholls, 2009). Support and mentoring are crucial.

Craft, Chappell, and Twining (2008), Feldman (1999), Freiman (2007), Howkins (2010a, 2010b) and Jackson and Sinclair (2006), all confirm the need for mentors and the importance of the teacher-student relationships in the development of creativity. Berkowitz's (2010) research into music (specifically jazz improvisation), informed by insights from neuroscience, provides evidence that students who have effective mentors to assist them build their skills in reflection,

given a sound knowledge base and technical skills in their domain, can become more creative, as long as they have space to "play" and experiment. Further, Freiman (2007), theorising about creative writing, emphasises the evolutionary and iterative nature of the creative process, the hard work that accompanies the original play with ideas, and the need for mentors to "scaffold" students (Vygotsky, 1978), so that they can reach their creative potential. Jackson and Sinclair (2006) argue that the four-stage cognitive apprenticeship (mentoring) model based on the earlier work of Collins, Brown, and Holum (1991) has much to offer students and teachers in the process of developing creativity. The model includes stages of (1) expert modelling, (2) scaffolding first creative efforts, (3) fading as the student becomes more competent, and (4) coaching as necessary. An important aim is to make thinking visible: this is required of both the student and the teacher, similar to Freire's (2000) idea of student and teacher co-creating knowledge, engaging in dialogue and working together. Feldman (1999) notes that even for very creative individuals the role of mentors and guides is important.

This, however, raises an issue of scalability in higher education, where classes continually increase in size, and opportunities for mentoring, scaffolding and dialogue diminish, despite the increased and improved availability of highly sophisticated networks of ICTs for course provision and delivery. The assumption that there will be an ongoing dialogue between student and teacher along the lines of the "conversational model" (Laurillard, 2002) becomes problematic. Therefore, the existence of supporting networks beyond the formal classroom, and "communities of learning" or "communities of practice" (Lave & Wenger, 1998) would seem to be key for the development of a cognitive apprenticeship model. That is why this research asked questions of practitioners and students about their use of networks and the importance of mentors for their creative endeavours (see survey and case studies).

2.5.8 Assessment of Creativity

Creativity cannot be explored without acknowledging the place of assessment in the design of creative pedagogies. This is because assessment is not only about confirming attainment levels and assuring standards, it is also one of the key drivers for what students do in formal learning contexts (Boud & Falchikov, 2007).

Experienced educational practitioners in higher education are likely to agree that "constructive alignment" (Biggs & Tang, 2009) is important to course design; that is, that assessment should be closely aligned with learning tasks and learning outcomes, not disconnected. Key to these arguments is the view that assessment should promote learning, be *for* learning, and make learning important (Boud & Falchikov, 2007). Taking the standpoint that learning is a creative activity, then assessment of creativity should likewise be creative and make creativity important. Assessment, formative or summative, is also the point at which value is assigned for creative product and process in higher education.

Assessment of creativity is particularly problematic, though, because creativity is personal, emotional and contextual (Williams & Askland, 2012) and will vary "from challenge to challenge" (Cowan, 2006, p. 158). Students may also see creativity as non-academic, or insufficiently professional and serious for higher education (Welkener, 2004). Difficulties measuring creativity also stem from the definitional problems associated with the phenomenon and therefore the difficulties settling on criteria by which it can be judged (Plucker & Makel, 2010). Jackson (2003) argues that a more synoptic approach to the assessment of creativity over a length of time considering a number of assessments (e.g. over a student's whole degree program) would be more appropriate than the atomistic approach generally employed.

Assessment of creativity is agreed to be difficult at the disciplinary level (Ball, 2010; Jackson, 2005; Penaluna & Penaluna, 2009; Williams & Askland, 2012). Nonetheless, as Cowley (2005), argues, formal assessment should not to be the "antithesis of creativity", nor the source of extreme student stress or the cause for undermining student confidence and development (Dineen, 2006; Osborne & Crowther, 2011; Walker & Gleaves, 2008; Williams & Askland, 2012). Agreement about achievement of assessment is not necessarily consistent between novices and experts (Plucker & Makel, 2010), a finding that has relevance for this research where students' participation in formative assessment activities as peer reviewers is investigated via the case studies. Plucker and Maker report that the domain in which experts and novices judge creativity impacts the consistency of rating across groups. For example, expert and novice ratings of the creativity of poetry may correlate

poorly, but when similar groups are asked to rate short stories, correlation is higher (Plucker & Makel, 2010).

Further, as Fryer (2012) argues, just because creativity is a "fuzzy concept" (p. 24), measurement of creativity does not need to be imprecise. The problems of assessing creativity may lie, as Williams and Askland (2012) conclude, in a poor understanding of the pedagogical dimensions of creativity, along with a lack of "appropriate strategies to understand where different levels of creativity occur and how they should be assessed" (p. 4), and a lack of tools and models to support assessment. If, for example, as Williams and Askland (2012) point out, educators are unclear whether creativity is "the consequence of rigorous problem solving or of play and improvisation", or it is "circular or linear, dynamic or static, general or specific, subjective or objective" (p. 6), or some other phenomenon, act, process or attribute, then assessment is likely to be poorly focused and a source of frustration for teachers and students. As a matter of good teaching practice, the tacit, habitual and assumed practices of teaching are always in need of interrogation and reflection; and scholarship in this area is likely to help practitioners, rather than hinder practice. This is reason enough for ongoing research in the domain.

Dineen (2006) argues that assessment strategies that provide a more holistic and complete picture of student creativity are those most likely to be meaningful and successful. If they are conceived as evaluation of the whole creative process, from conception to final outcome, this ensures that the important processes of personal reflection, self-assessment, management of learning and decision-making are captured along the way. Integration of more creative and holistic assessment practices in higher education may also be an important strategy for improving student engagement, and students' sense of meaning as it relates to formal learning. The ALTC funded *Studio Teaching Project* (Zehner et al., 2009) confirmed this in their findings. The importance of meaning, and meaning making and learning, is taken up by Wesch (2008a) who refers to a crisis of significance in universities, as students increasingly fail to perceive meaning in their courses. Students go through the motions to complete assessment requirements in order to pass, receive their grades and graduate, without fully engaging in their learning. Changes along the lines recommended by Dineen (2006) may go some way to addressing this. A

perspective on this issue that contributes insights into this problem is recognised in student interviews conducted for this research (see chapters 5 and 6).

Cowan (2006) suggests that assessment of *achieved* learning outcomes rather than *intended* learning outcomes may be a way forward in the assessment of creativity. To this end, Cowan recommends presentation of a student portfolio where examples are gathered over time, and the collection contains specified elements, and is scrutinised for the rigor of student *self*-assessment. That is, the teacher evaluates how well the student has achieved and assessed his or her own learning goals. Students are required to set their own goals (within certain parameters), and articulate judgements made about the level of creativity demonstrated according to those personal goals. While portfolios are a common assessment tool in the arts and the creative industries, portfolios per se are not necessarily creative documents (Walker & Gleaves, 2008), so this refinement is worth consideration. The teacher's role is to set up the conditions for learning and self-reflexivity, and to facilitate the process by mentoring, guiding and challenging students along the way. In many contexts this change to assessment practice will require educational leadership and "tactical nous" on the part of its champions (Cowan, 2006). The integration of web-based, electronic portfolios (e-portfolios) for this purpose is on the rise in pockets of higher education as the technology improves (Allen & Coleman, 2011; Hallam, Harper, Hauville, Creagh, & McAllister, 2009) but the pedagogical design is key if the technology is to develop in line with the needs of educators.

2.5.9 Learning Designs

Learning designs are textual and/or visual patterns for representing educational activities. They are a means of documenting, modelling and sharing learning and teaching practice. Learning designs may also be a means of fostering creativity: firstly in the development of the design itself, and secondly in the adaptation and reuse of extant designs (Garzotto & Retalis, 2009). There is no one method for representing learning designs either graphically or textually (but see example (Australian Universities Teaching Committee, 2003). Two models were used for this study: a text-based model adapted from the EnRoLE project (Wills, 2006-2009; see also Appendix I), plus an original representation in visual form (see e.g. Figure 6.2).

The term "learning design" may be used in one of three ways: (1) to represent pedagogical designs as *artefacts*, that is, as the "documented outcome of the design process" (Agostinho, 2011, p. 962); (2) to refer to the *process* of designing learning experiences (Conole, 2009); or (3) as standardised Learning Designs (Koper & Tattersall, 2005)[6]. It is the first two conceptualisations of learning design that are relevant to this study. While the field of learning design is relatively new to education and educational technology (since 1999, according to Garzotto and Retalis, 2009), research in the field moves ahead rapidly (see e.g. Agostinho, Bennett, Lockyer, & Harper, 2013; Lockyer, Bennett, Agostinho, & Harper, 2009). To date, the focus of learning design has been conceptualised around the utilisation of content within learning activities (Conole & Fill, 2005). Whether this approach is optimal for representing the iterative and messy processes of creative tasks, or even more connectivist approaches[7] to learning, is an area for further inquiry. This research, however, makes an original contribution to learning design pattern language through the examples derived from the case studies documented in chapter 6.

The use of "pattern language" as an aid to educational design is based on the work of the architect, Christopher Alexander (Alexander et al., 1977). Alexander's pattern language is concerned with communication of adaptable patterns that provide models for design and construction based on examples tested in the real world. They are a method of documenting collective knowledge.

> Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem in such a way that you can use this solution a million times over without ever doing it the same way twice. (Alexander et al., 1977, p. x)

Goodyear (2005) sees these patterns as "a solution to a recurrent problem in a context", and from an educational design perspective a means of bridging the gap between "philosophy, values, theory, empirical evidence and experience . . . and the practical problems of design" (p. 90). He goes on to say that Alexander's approach to

[6] This third usage of the term refers to a standards-based approach to expressing learning designs via a formal language (Koper & Tattersall, 2005) represented by the IMS specification (http://www.imsglobal.org/learningdesign/). Discussion of this aspect of learning design is beyond the scope of this project.

[7] See section 2.6.1.

design patterns provides guidance without constraining creativity: a "principled, structured but flexible resource for vernacular design" (p. 90). Design for learning is a creative process, as Goodyear and Dimitriadis (2013) explain, as it involves problem finding, problem solving and problem reframing. They add: "it often involves reconciling competing forces, rather than optimising on a single goal" (p.2).

The view that the development of student learning experiences should be more design-based is echoed by Laurillard (2012), Conole et al., (2008), Goodyear and Retalis (2010), Phillips, McNaught, and Kennedy (2012), and Barab and Squire (2004). In addition, Laurillard (2012) supports the view that teaching should be viewed as a design science, that teachers need to work collaboratively to create and develop innovative teaching, and that pedagogical patterns are a useful support for this. By identifying subject specific elements and separating them from the pedagogical process in a pedagogical "blueprint", these designs can potentially be adapted from one discipline to another.

Sharpe, Beetham, and Ravenscroft (2004) note that "representations of knowledge used in academia have tended to be difficult for practitioners to access" (p. 16), and there is a need for models or representations that are credible, richly contextualised, accessible, and easy to adapt and use. Potentially, effective learning design patterns can fulfil this role, as they are a useful method of capturing most elements of the learning experience in a particular context, including activities, resources, supports, and in this study, creative process.

Nonetheless, producing learning designs is a "messy, creative and interactive process, and . . . even when working in teams there is a large element of individuality in the design process" (Conole et al., 2008, p. 182). In addition, to translate the design from one context to another, from discipline to discipline, usually requires a mediator to ensure reasonable adoption, or even acceptance at all (Philip & Cameron, 2008). However, there is still a gap between theory and practice in this domain and it is seldom that a learning design can be selected off the shelf and implemented as is: a process of customisation is usually required. Nonetheless, there is value in the use of learning designs to share best practice and to inspire design, particularly in complex technology-enhanced learning settings. The five learning designs derived from this research (see chapter 6 and Appendix I) make a contribution to theory and practice in this domain.

2.6 TECHNOLOGY-ENHANCED LEARNING (TEL)

2.6.1 Definitions, Networks and Connectivism

Technology-enhanced learning (TEL) environments are now ubiquitous in higher education; they underpin the contexts where creativity is fostered, so the impact of new and emerging technologies cannot be ignored in a discussion on creativity. Technology-enhanced learning is an umbrella term covering networked learning, online learning and elearning (Goodyear & Retalis, 2010). These terms are used interchangeably and somewhat loosely in the literature and in practice. TEL refers broadly to the use of information and communications technologies (ICTs) and pedagogical methods in support of learning and teaching. It includes both hardware and software, and is not confined to particular pedagogies or technologies (Goodyear & Retalis, 2010). Importantly, many of the technologies associated with TEL afford connections amongst students, teachers, resources (people and things) and networks.

Most higher education courses require substantial use of one or more of the following: a learning management system (LMS), such as Blackboard or Moodle, web-based information and databases, social media and networking tools, mobile technologies, cloud computing, lecture capture software and web conferencing. As these ICTs proliferate their impact on formal learning settings increases and the boundaries between campus-based (face-to-face and blended learning mode[8]) and off-campus (online and distance learning) become blurred (Beetham & Sharpe, 2007; Goodyear & Retalis, 2010; Gosper et al., 2011; Johnson, Adams Becker, Estrada, & Freeman, 2014; Laurillard, 2012). Due to changes in higher education funding models more students must now manage the competing demands of employment and study. Consequently, students focus on employment, attend campus less frequently, and look for the flexibility afforded by online options and mobile technologies (Bower, Kennedy, Dalgarno, & Lee, 2011).

ICTs in higher education learning contexts serve as both enablers and barriers for teachers and students (Hedberg, 2006; Kregor, Breslin, & Fountain, 2012; Reed, 2014). The availability of these digital technologies also means that there are more

[8] Blended learning is the combination of face-to-face teaching methods with the use of online technologies.

tools and pathways that students can use to be creative, if and as they choose. Web 2.0 applications and services and mobile technologies potentially enable students to become active producers ("prosumers") of knowledge and experiences, rather than passive "consumers". (The term "prosumer" was originally coined by Toffler (1971, 1980) but see also McLoughlin (2010), McWilliam (2007), and Johnson (2014)). Networks of user-generated activity and content multiply, and social networks, real and virtual, are said to underpin all contemporary social organisation (Castells, 2001; Johnson et al., 2014; Mason & Rennie, 2008). It is a model of new media where communication is "continuously renegotiated in action" (Hartley, 2011, p. 3). Yet the education system is premised not on negotiating and managing these networks of "people, technologies, knowledge and ideas" but on "individualised acquisition of content and skills" (Mason & Rennie, 2008, p. 6). The need for students to cultivate and possess more specialised social networking capabilities is affirmed by Bridgstock, Dawson and Hearn (2011) and Allen (2011).

While students may use these networks in their private lives, use in the learning context is another matter. A national study of Australian first-year students conducted by Kennedy et al. (2008) found that use of a technology for social or entertainment purposes does not automatically transfer into the learning context. The study provided evidence of great diversity of experience amongst staff and students regarding the use of new and emerging digital learning technologies. The technological experience of students entering university was not homogeneous, and a "sophisticated knowledge and understanding" of ICTs could not be assumed (p. 109). These findings have particular resonance for student behaviour reported in the case studies discussed in chapters 6 and 7.

A theory that has bearing on the interpretation and analysis of these networks is connectivism (Downes, 2007; Siemens, 2005). Siemens' (2005) work on connectivism presents the view that learning is now about individuals building networks, which they use as necessary, to locate people ("contacts"), information and resources required for learning. Users build and rely on these networks to find the answers to real problems, and this is possible because of the proliferation of mobile, networked services and ICTs, which shape and impact learning, teaching and research. Anderson and Dron (2011) in critiquing arguments for connectivism

observe that the theory is predicated on the assumption that networks are accessible and ubiquitous. This may be true for some but not all students. Anderson and Dron go further, suggesting that connectivism is more a theory of *knowledge*, rather, than a theory of *learning*, a view supported by Kop and Hill (2008), as a theory of learning provides a picture of how learning, in all its dimensions, takes place. Kropf (2013) also has evidence that Siemen's view of connectivism cannot replace other learning theories such as behaviourism and constructivism in all circumstances. Forster (2007) maintains that for connectivism to be a theory of learning it must account for learning in all contexts, and the limitations of the theory must be made explicit. But as Kop and Hill (2008) argue, until proponents of connectivism can show that these conditions have been met, then it cannot be treated as a theory of learning in its own right. Nonetheless, its contribution to understanding pedagogies for the digital age is recognised.

2.6.2 Disruptive Technologies

Digital technologies can be disruptive to learning environments: to pedagogical approaches, relationships, interactions and university structures (Anderson & McGreal, 2012; Gallagher & Garrett, 2013; Hedberg, 2006; Selwyn & Facer, 2013). At the same time they can support change, learning and teaching, and creativity. The recent emergence of MOOCs (massive open online courses) is an example, as they continue to change expectations around pedagogy, credentialing and delivery methods (Gallagher & Garrett, 2013; Severance, 2013; Siemens, 2012). MOOCs paradoxically offer opportunities for new pedagogies while at the same time reinforcing more transmissive models of online learning.

To avoid a technological determinist view, that is, one where the impact of technology is seen as inevitable, and "the role of a progressive society to adapt to (and benefit from) technological change" (Green, 2002, p. 2), a new perspective on these disruptive technologies is required. Proponents of a more critical view (a social determinist perspective) argue that technology and society mutually shape one another, and the context in which technology develops is as important as the technology itself (e.g. Green, 2002; Selwyn & Facer, 2013). From the latter viewpoint, technology is not assumed to be neutral, as Green explains:

> The social and cultural circumstances in which that technology was developed, and the policy and regulatory regimes under which that technology is deployed [are relevant]. Neither technology nor culture is neutral–both reflect people and society, the power of different social groups and the outcomes of competing priorities. (Green, 2002, p. 5)

From this perspective the development of creativity within educational contexts can be seen to influence and be influenced by new and emerging technologies alongside socio-cultural, political and economic imperatives. In addition, if, as Satchell and Dourish (2009) argue technology use is understood as a cultural phenomenon, then not only the *use* of digital technologies should be of interest to researchers and academics but also the *non-use*, as both actions (use and non-use), have meaning and purpose. Non-use is not a "negative space", but rather it may be "active", "nuanced, directed and productive" (p. 8). Satchell and Dourish have characterised this non-use in six forms as lagging adoption, active resistance, disenchantment, disenfranchisement, displacement and disinterest. The issue of non-use has particular relevance to this research as it relates to staff and student perspectives on the use of networks (see chapters 5 and 7).

Laurillard (2012) sees a strong relationship between the development of technology and changes in education. Despite the close connection between education and new technologies over time, Laurillard observes that education rarely drives the development of the technologies it adopts for its own purposes: the exceptions being the blackboard and chalk, and some learning management systems. Laurillard argues that education usually adapts technologies made for other concerns; for example, writing was developed to support commerce, books were made for the dissemination of religion, and slide presentation tools were invented for business purposes. Laurillard warns educators to better equip themselves when it comes to managing new digital technologies:

> Precisely because of their potential to change education unbidden, it is imperative that teachers and lecturers place themselves in a position where they are able to master the use of digital technologies, to harness their power, and put them to the proper service of education. (Laurillard, 2012, p. 2)

Laurillard's argument is that it is better to be empowered by technological change rather than be a slave to it. She suggests proactively interrogating new technologies for their worth and value, and assessing their affordances for each new context. This is critical as new and emerging technologies proliferate and change what it is possible to create in higher education.

2.6.3 New Pedagogies for TEL Environments

As technologies change, new organisational and pedagogical models that better exploit and shape these technologies are required (Bates, 2008; Livingston, 2010; McWilliam, 2007; Paul & Brindley, 2008; Wesch, 2008a, 2008b). Preferably the models chosen allow for seamless integration of pedagogy and technology (Goodyear & Ellis, 2008). As discussed, making these choices is challenging because the complex web of ICTs available impacts the design, development and expression of creative products and processes. When the emphasis shifts towards more group work in support of the creative process, it is essential that there is effective management of *virtual* creative teams (Chamakiotis, Dekoninck, & Panteli, 2013), and that pedagogical design accounts for teams that make substantial use of social networks and emerging technologies. Individual group composition and the role of participants within the group cannot be ignored, and creative leadership style and management (Jablokow, 2007) are design factors (see section 2.6.4).

It is therefore not unexpected that higher education practitioners new to technology-enhanced learning (TEL) often have difficulties conceptualising and devising learning activities that scaffold learning and engage students in these contexts, while at the same time making full use of the affordances of the technology (Goodyear, 2005; McLoughlin & Lee, 2010). Even though the principles and issues of designing for TEL environments are generally well documented (e.g. Beetham & Sharpe, 2007; Bonk & Graham, 2006; Garrison, 2011; Laurillard, 2012; Littlejohn & Pegler, 2007; Samarawickrema & Stacey, 2007; Stein & Graham, 2014), this is not the case for designing for *creativity* in these contexts, as Dawson, Tan and McWilliam (2011) confirm.

There is a gap in the literature regarding research into creative pedagogies in higher education and TEL environments. The extant literature tends to cluster around issues such as e-portfolios (e.g. Allen & Coleman, 2011; Hallam et al., 2009), or

pedagogical approaches such as online role play and virtual world interactions (e.g. Gregory & Masters, 2012; Warburton, 2009). However, creativity is often only briefly mentioned in this literature, as the discourse tends to focus on student engagement, authentic learning tasks or problem solving. Further, while books abound on general creativity (e.g. Kaufman, 2009), these seldom focus on TEL. The landscape may rapidly change in the near future, however, as literature emerges from research into MOOCs that specifically "teach", foster or critique creativity.

Other representative examples of projects that less explicitly address issues of creativity but, nonetheless, provide insights into the problems of creativity and TEL environments include the following ALTC (OLT) projects. Some of these have been mentioned previously: (1) Osborne, Franz, Savage, and Crowther's (2011) study of architecture students, the pros and cons of blended learning and setting up the conditions for creativity in the design studio; (2) the *Studio Teaching Project* (Zehner et al., 2009), which provides examples of creative pedagogies within fully online learning, blended learning and game-based learning, fostering creativity in the visual and design arts; (3) the *Learning in Networks of Knowledge* project (LINK) (Allen, 2011) that encourages the adoption of innovative solutions to learning and teaching problems through the effective use of internet-based tools; and (4) the *EnRoLE* Project (Wills et al., 2009) established with the aim of encouraging role-based elearning.

2.6.4 Creative Groups and Virtual Teams

Investigation of the role of networks and creative groups as they relate to fostering students' and teachers' creativity is an interesting development in the literature, especially as this intersects with advances in new and emerging digital technologies. The literature on the relationship between groups and communities and the development of creativity suggests that individuals need to come and go from these spaces and networks as the task, product or process requires (Csikszentmihalyi, 1999; Howkins, 2010b; Wenger et al., 2002). McWilliam and Dawson (2008) call this "flocking". "Flock mates", that is, self-managing teams of interdisciplinary and/or multi-skilled students congregate for a period of time and, like a flock of birds, separate, align and re-aggregate as required for any given task, knowing when to work alone and when to work with others for a collective creative outcome. As

suggested earlier, Kim, Hong, Bonk and Lim (2009) suggest that more research be conducted into these new learning communities and interaction spaces, and this study provides some evidence regarding student patterns of engagement in regard to this (see chapter 7).

As with all groups, the skills, perspectives and attributes of individuals and their relationships within and across the group affect outcomes. “In a problem-solving team, there are two fundamental challenges: managing the team and solving the problem” (Allen, 2009, p. 9). Both elements need to work effectively for the team to be productive. Jablokow (2007) discusses this in relation to engineering problem solving teams and concludes that there is no one style of team that is best for problem solving. “Homogeneous teams (that is, teams of individuals with similar styles) may be easier to manage because the team members get along more readily, but their breadth of problem solving is narrower” (p. 34). Heterogeneous teams, however, may be more difficult to manage but are capable of solving a greater breadth of problems. Jablokow draws on Kirton’s (1976, 1980) adaption-innovation theory, which argues that individuals adopt different cognitive styles when problem solving. While adaptors prefer more structure than innovators, each style has its strengths and weaknesses. Jablokow explains the paradox of this requirement for *more* or *less* structure where teams are concerned: “the same qualities that help a team solve certain problems also limit it in other ways” (p. 34). The challenge for the leader is to manage the adaptors and innovators in a team, as each style is creative, but adaptors tend to seek to do things *better* while innovators tend to do things *differently*.

Taggar (2002) and Howkins (2010b), emphasise the need to consider the conditions under which group creativity emerges. Taggar investigated the determinants and interrelationships around individual and group creativity in a study of ninety-four student groups, simulating work on open-ended tasks likely to be met in the workplace. Taggar sought to discover more about “the social behaviour that determines a group’s ability to utilise individual creative resources effectively” (p. 315). As expected, the productivity of the groups was enhanced when communication was effective, there was evidence of openness in the sharing of information, and recognition of other group members’ viewpoints and ideas. This

fostered a social climate that resulted in “expanded sources of knowledge” and encouraged team members to think originally (p. 327). It was possible, therefore, for individuals to achieve at a higher level within the team, and the result was more than the sum of the parts, as strength in one area made up for weaknesses in another. Taggar concluded that there was a need for training in “team creativity-relevant processes”, and maintenance of “a facilitating social setting” (p. 328). If these elements are not attended to Taggar’s research indicates that creativity can be stifled, a theoretical position supported by Paulus, Larey and Dzindolet (2001).

Chamakiotis et al. (2013) investigated the issues of creativity in creative teams in the context of engineering *virtual* design teams (VDTs). This was of particular interest to me during my candidature as I participated in a virtual team in a MOOC (see section 7.7.4), and the first case study for this research (case 1, section 6.3) involves online teams. Chamakiotis et al. selected *idea generation* as one form of creativity for their inquiry. Their qualitative findings indicate:

- That core individual characteristics still influence creativity in virtual teams (characteristics such as personal experience and educational knowledge, communication and organisational abilities);
- That unique virtual team characteristics affect creative outcomes (e.g. geographical dispersion, heterogeneity, behaviours of sub-groups and dominance of certain voices within the group);
- Leadership styles are significant and should “aid creativity from start to end” and that “models of emergent and shared/collaborative leadership” are also significant (p. 276).

The platform used for creative virtual teams is “pivotal”, and even though all media (ICTs) “have the potential to influence VDT creativity positively” (p. 276) it was the way that participants used the technology that determined whether or not the technology inhibited creativity or fostered it in the virtual environment.

If “being creative” is seen to be a social and collaborative activity then the ability to navigate and position oneself within social networks and creative teams, to use the affordances of the technologies to cultivate relationships, build communities and contacts, create and find resources is an essential capability for students. As

distributed, internet-based, mobile, interdisciplinary learning communities and self-organising networks now change the way knowledge can be produced, and by whom, many former boundaries and barriers to interaction crumble. Boundaries between online and offline, on campus and off campus are blurred, as are boundaries between students' university experiences as creative learners and their experiences outside the university. Creation, communication, documentation and publication are all possible from a hand-held, mobile smart phone. In higher education, production and dissemination of knowledge are no longer confined to universities, and information is potentially accessible anywhere, anytime: provided the user has access to the technology and the requisite skills to use it. Evidence from this study provides further insights into students' use of these social networks for university-based creative outcomes.

2.7 GAPS IN THE EXISTING RESEARCH

Although research into creativity grows apace like the ever-expanding universe, there are gaps in the literature that this research explores. Firstly, the literature indicates that the discourse within academia around the notion of creativity is limited (European University Association, 2007; Swirski et al., 2008). There is little agreement on its definition, even within disciplines (Williams & Askland, 2012), and as a graduate attribute creativity is under-researched from a cross-disciplinary perspective. There is a gap between what is known in theory and actual practice. Exploration of these gaps in this thesis provides illumination of the issues, and contributes to the discourse.

The scholarly literature revealed few documented, in-depth models of contemporary practice regarding creative approaches and new pedagogical models: these are required for education in the creative economy and the evolving knowledge society (Robinson, 1999). Examination of the literature also indicated that there is an ongoing need to discover, design and share models (Barab & Squire, 2004; Goodyear, 2005), as these help express and construct creativity within and across disciplines. There is a lack of documented learning designs that explicitly address the problem of designing for creativity, especially models generated in naturalistic settings, and this study contributes to the domain in terms of original theoretical and practice-based models.

Given the new context for learning, where students operate in a highly connected, information-rich world, mediated by Web 2.0 digital technologies, investigation of this learning context as an evolving space for the development of creativity is important. This review of the literature, along with the findings of Dawson, Tan and McWilliam (2011) confirms that there is a lack of specific research on creativity within technology-enhanced learning environments. This is a new interaction space that would benefit from more research (Downes, 2007; Kim et al., 2009; Siemens, 2005).

Finally, the literature review revealed that there is limited research accounting for students' perceptions in higher education of being creative, working in creative groups and working with the specific purpose of being creative online. The literature is nascent, and this study makes an important contribution to the domain.

2.8 CONCLUDING COMMENTS

The acknowledged gaps in the literature outlined above indicate the value of pursuing the aim of this study: *how creativity can be fostered and designed for in higher education.* It is clear there is room for more focused research in this problematic area. There is no one way to express creativity or to approach it theoretically or pedagogically, and disciplinary cultures, contexts and technologies affect outcomes. The literature provides evidence that second generation creativity can be fostered and designed for and, although this research continually raises paradoxes and contradictions about how that might be achieved, it does demonstrate that creativity, though complex, can be researched. It is possible to illuminate the problem without becoming paralysed by the extraordinary amount of information on the subject, and focus on areas that can benefit from further investigation, such as educators' understanding of "being creative" (RQ1), lessons that can be learnt about fostering and designing for creativity from educators in the field (RQ2), and the impact of technology-enhanced learning environments on the development of creative pedagogies (RQ3). Now that the scene has been set for the study via the literature review, the next chapter outlines the methodological approach for the investigation.

Chapter 3 Designing for Research: Mixed Methods

Though this be madness, yet there is method in't.

–William Shakespeare, *Hamlet,* Act 2, Scene 2

3.1 PURPOSE AND STRUCTURE

For this challenging inquiry into creativity I adopted a mixed methods approach, combining qualitative and quantitative methodologies. The demands of the topic called for insights into generality and particularity, patterns of regularity and difference (Greene, 2008), and a mixed methods approach supported this. The online survey provided a generalised view of attitudes and beliefs about creativity broadly across the higher education sector, and the case studies revealed specifics and in-depth examples from practice, illuminating contexts and issues.

There are five sections in chapter 3. After an introduction to the research design, including the rationale for the choice of a mixed methods approach and an explanation of the underpinning social constructivist epistemology, I explain my position as the author-researcher. The research questions are reiterated in section 3.2.2 for convenience. In section 3.3 data collection methods for the survey and the case studies are outlined, and the criteria for choice of the case studies. Quality and ethical considerations are included in the same section. The quantitative and qualitative data analysis methods are explained and rationalised in section 3.4, beginning with the descriptive and inferential statistics methods for the quantitative data, followed by the informed grounded theory methods for the qualitative data. The chapter concludes with a summary and a discussion of research as a creative process (section 3.5). Note that the limitations of the study are outlined in chapter 8 (section 8.12) and the research timeline is provided in Appendix B.

3.2 DESIGN OF THE RESEARCH

3.2.1 Rationale for the Mixed Methods Methodology

Mixed methods has been called the "third research paradigm" as it is a comparatively new method, compared with quantitative and qualitative methods (Johnson & Onwuegbuzie, 2004). However, authors such as Siebers (1973) and

Guest (2012) confirm that researchers have long been integrating qualitative and quantitative methods, "before the field of mixed methods formally emerged and typologies were established" (Guest, 2012, p. 142).

Creswell and Plano Clark (2011) provide a useful definition of mixed methods based on a synthesis of their own previous definition, and definitions articulated by authors over recent years (e.g. Greene, 2007; Greene, Caracelli, & Graham, 1989; Johnson, Onwuegbuzie, & Turner, 2007; Tashakkori & Teddlie, 1998). In this definition, methods, philosophy and a research design orientation are integrated.

> [The researcher] collects and analyses persuasively and rigorously both qualitative and quantitative data (based on research questions); mixes (or integrates or links) the two forms of data concurrently by combining them (or merging them) sequentially by having one build on the other, or embedding one within the other; gives priority to one or to both forms of data (in terms of what the research emphasises); uses these procedures in a single study or in multiple phases of a program of study; frames these procedures within philosophical worldviews and theoretical lenses; and combines the procedures into specific research designs that direct the plan for conducting the study. (Creswell & Plano Clark, 2011, p. 5)

Employing this integrated approach, I mixed data from quantitative and qualitative sources, combined and analysed the data to build a rich and multifaceted picture of the complex phenomenon that is teaching for creativity and teaching creatively.

Other theorists have made the case for similarly holistic and integrated approaches to research into creativity and education, both of which are inherently complex (e.g. Feldman (1999), citing creativity research by Csikszentmihalyi and others). In addition, mixed methods approaches have been used to inquire into creativity by Dineen (2006), Fryer (2006a), and McWilliam and Dawson (2007), with successful results. Further, the argument for a more holistic approach has been offered by Ehrmann (1995) and Russell (2001), who emphasise that examination of isolated variables in educational research without regard to context, particularly in relation to the impact of ICTs, has, in the past, produced research outcomes that have

led to the phenomenon of “no significant difference”. This has delivered misleading findings, doing little to help practitioners (Ehrmann, 1995; Russell, 2001).

One of the challenges of mixed methods is to “maintain the integrity of the single study” and not let it “decompose into two or more parallel studies” (Yin, 2006, p. 41). To avoid this pitfall I employed three strategies. Firstly, the overall aim to discover how educators can foster and design for creativity in higher education glued the inquiry together with one purpose throughout, and the three research questions were applicable to both quantitative and qualitative phases of the research. Secondly, I replicated certain questions in both the practitioner interviews and the survey, a tactic which Yin (2006) would likely confirm is a significant means of strengthening the integrity of the research.

The third strategy adopted to preserve a cohesive mixed methods approach addressed a concern raised by Plano Clark, Garrett and Leslie-Pelecky (2010) regarding the process of combining qualitative and quantitative data sets. In my research, the outcomes of each strand (qualitative and quantitative) were separately reported and analysed (chapters 4 and 5, 6 and 7), then synthesised and evaluated as a whole (chapter 8). In addition, throughout the data collection and analysis phases, quantitative and qualitative findings were constantly compared, contrasted and woven into the final theory and design principles. Having addressed all the concerns above, the use of a mixed methods approach is justified, particularly given the focus of inquiry and the nature of the research questions.

Overall, this study may be characterised as predominantly naturalistic and inductive (Gillham, 2000), that is, based on qualitative methods, supported by deductive methods (quantitative methods). While the survey realised significant results from the general perceptions of a large sample of practitioners in the field, the five qualitative case studies are the core of the research; although the survey captured considerable qualitative data along with the quantitative data.

In terms of structure, I employed a concurrent triangulation design for the data collection and analysis so that any inherent weaknesses in either quantitative or qualitative approaches were offset (Creswell, 2009). By drawing on multiple sources of data, incorporating multiple methods of data collection and analysis, and maximising the strengths of each approach (quantitative and qualitative), mixed

methods realised the intention of illuminating exemplary educational practice in context (see Figures 3.1 and 3.2).

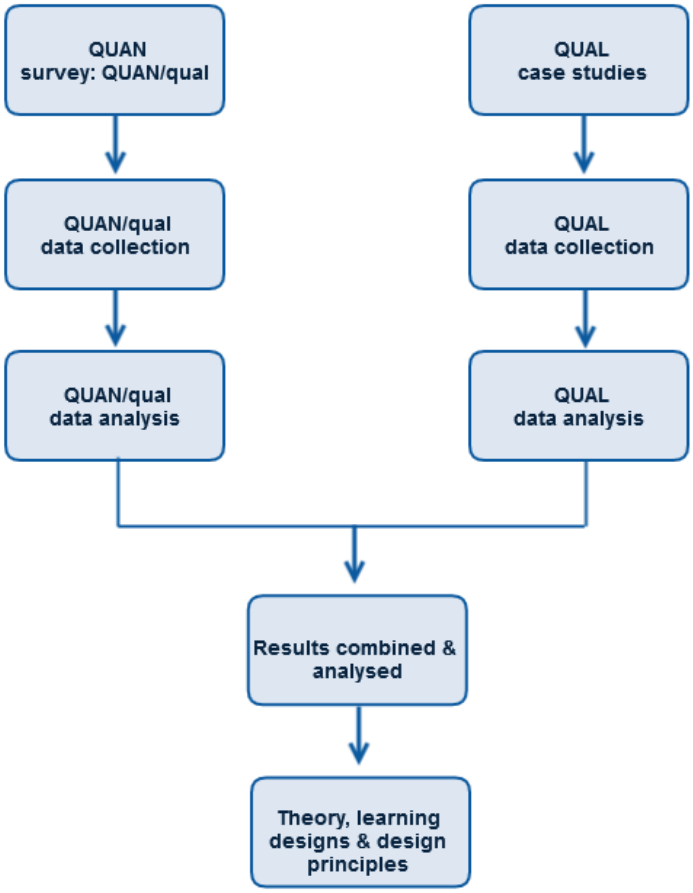

Figure 3.1. Concurrent triangulation design for mixed methods. (Source: Adapted from Creswell, 2009, p. 210) Following Creswell's notation style, "QUAN" and "QUAL" signify substantial quantitative or qualitative data (respectively); "qual" signifies a comparatively lesser amount of qualitative data.

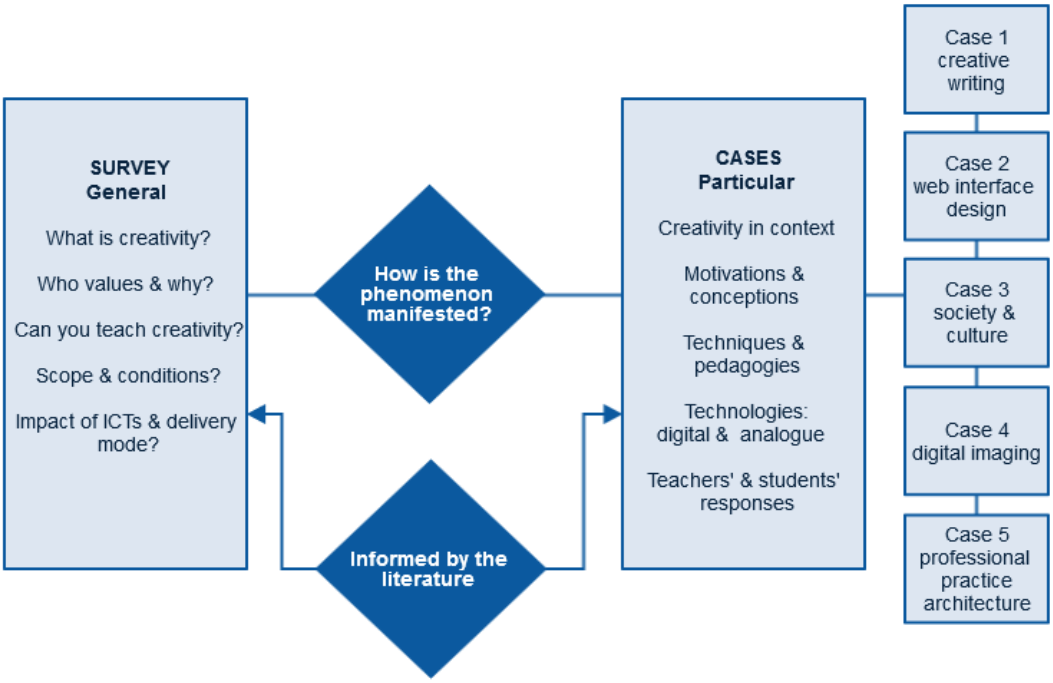

Figure 3.2. Mixed methods: From the general to the particular.

3.2.2 Research Questions

The research questions applied to quantitative and qualitative phases of the research and addressed the aim, which was to discover *how educators foster and design for creative learning and teaching within higher education.* Section 1.3 presented the questions in full, but in summary they were:

RQ1: What do educators understand by "being creative" in the context of learning and teaching in higher education?

RQ2: What lesson can be learnt about fostering and designing for creativity in higher education from educators in the sector and, in particular, from exemplary creative practitioners?

RQ3: What is the role and impact of technology-enhanced learning environments on the development of creative pedagogies? Do they limit or contribute to creativity in this context?

3.2.3 Research Paradigm: Social Constructivism

The philosophical paradigm underpinning this research is a social constructivist epistemology. This is an interpretive worldview (Creswell, 2009) and more a perspective on methodological issues than a method itself (Maréchal, 2010). Grbich provides a useful definition of a social constructivist/ interpretivist worldview as one where:

> Reality is viewed as socially and societally embedded and existing within the mind. Reality is fluid and changing, and knowledge is constructed jointly in interaction by the researcher and the researched through consensus. Knowledge is subjective, constructed and based on the shared signs and symbols which are recognised by members of a culture. Multiple realities are presumed, with different people experiencing these differently. (Grbich, 2009, p. 8)

In summary, knowledge and meaning are negotiated through interaction with others, through social processes, and within historical and cultural contexts. According to Collins (2013) the term "social construction" was first used in 1967 by Berger and Luckman (1967), but social constructivism has its origins in the early work of constructivists Kelly (1955) and Piaget (1969) and later social constructivists such as Vygotsky (1978) and Bruner (1990). It has multidisciplinary origins in sociology, literary studies, and postmodern approaches (Young & Collin, 2004), and there are many shades of constructivism and constructionism with greater and lesser degrees of "critical spirit" (Crotty, 1998, p. 58). Marton and Booth (2009) see it as an umbrella term. For the purposes of this research, however, Grbich's description above is sufficient.

Grbich (2009) identifies three main issues for researchers adopting this epistemology. They are: (1) issues of intersubjectivity–knowing when shared cognition is really achieved; (2) over-emphasis on micro details, leading to a superficial understanding; and (3) poor application or exploration of interpretive processes. In addressing these concerns, I argue firstly that one can never really know if shared cognition has been achieved, as constructions of reality will always be subjective, personal and open to change; the best is an approximation, achieved through in-depth discussion and shared experience. For example, in the case study research process, by iteratively clarifying concepts as they arose in interviews and

asking well-directed and reflective follow-up questions, along with classroom observation, I was able to further challenge my understanding of perceptions revealed by participants. These sorts of processes helped develop a shared cognitive understanding. The other two concerns raised by Grbich (superficiality and inadequate process) were addressed through well-documented data gathering processes (as outlined below in section 3.3), and rigorous analysis of the qualitative data using informed grounded theory methods (explained in section 3.4.2).

3.2.4 Position of the Author–Researcher

In keeping with a social constructivist epistemology, I acknowledge the influence of my own background and experiences on this study. This is relevant in all aspects of the research, from the early research design decisions, through to selection and construction of data gathering instruments, data collection, analysis and theorising. My background in teaching, educational and academic design and development, elearning, distance education, and creative writing, have all led to a worldview influenced by the critical pedagogy of educators such as Freire (2005).

My view of teaching is that it is a transformative activity, involving reflective praxis, reflection in and on action (Schon, 2011). I see educational institutions not merely as places of cultural reproduction, but as learning spaces where cultural practices can be re-examined, and diversity and difference celebrated. By raising students' awareness of their own capacity to be creative, I think students can develop the self-efficacy to participate actively and critically in society, and express this with their own voice. My views on creativity are particularly influenced by the work and case studies of the American psychologist Mihaly Csikszentmihalyi (1997), the British educationalist Norman Jackson (2006) and the work of Australian academics, Erica McWilliam and Shane Dawson (2008).

I view this thesis as a socially constructed narrative. It is my interpretation of what I have observed, documented, and constructed along with research participants. Others may bring a different interpretation to the data. I do not see the researcher as a neutral observer in either quantitative or qualitative research, and the language used conveys meaning that reflects my personal biases, views and values.

3.3 METHODS: DATA COLLECTION

As previously outlined, I collected and analysed data using both qualitative and quantitative methods (see Figure 3.1). Along with the literature review, which included examples of creative pedagogies, projects, courses, professional development guidelines, and learning designs from university and other websites, I employed the following data gathering methods:

1. An online survey, targeting staff who teach, manage, support and lead learning and teaching in Australian higher education (addressing RQs 1-3);
2. Five detailed exemplary cases that exemplified methods of teaching creatively, and teaching for creativity. Case study data gathering methods included semi-structured interviews with unit (subject) coordinators, tutors and students, classroom observation (online and offline) (at times as a participant), analysis of lesson plans and curriculum documents, and field research. For the case analysis I used a variation of grounded theory known as informed grounded theory (see section 3.4.2), and through these methods addressed all three research questions (RQs 1-3).

3.3.1 Data Collection: Online Survey

Purpose and rationale

The purpose of the survey was to take a snapshot of the attitudes, opinions and motivations of a sample of those who teach, manage, support and/or lead learning and teaching in Australian higher education in 2012. This elicited insights for all three research questions. The survey sample was derived from a similar population to that found in the case studies, and it provided a general view from a cross-section of practitioners. It also provided a point of comparison with the detailed perspective provided by the exemplary case studies. Case study participants were not required to complete the anonymous survey, and may or may not have done so.

While similar research into creativity in the UK (Fryer, 2006a) and Australia (McWilliam & Dawson, 2007) had previously been undertaken, this study did not set out to verify either of those inquiries as (1) the target population differed, (2) the focus of inquiry went beyond questions asked in the earlier surveys about first and second generation creativity, and (3) my survey included questions about creative

thinking, critical thinking and problem solving, and the context of teaching within technology-enhanced learning environments and the impact of delivery mode.

The purpose of the survey was mainly to gather quantitative data, yet responses to the open-ended questions realised substantial amounts of rich qualitative data, and raised issues and questions about the efficacy of "teaching" creativity, which could be pursued in more depth during the interviews with staff and students. The survey was also potentially a means of recruiting participants for the case studies, as well as locating other relevant projects and examples, although this did not occur in practice as the case study participants instead came through personal recommendations or Internet research.

Questions and instrument for the survey

Twenty-two original questions were incorporated into the survey as five-point Likert-scale or open-ended questions. Responses were invited to questions about the concept of creativity, its perceived value within respondent's institution, its importance as a graduate attribute, whether or not creativity could be "taught", the conditions under which it might be promoted, the relevance of increasing class sizes, networks, digital technologies and delivery mode on the development of creativity, plus a range of demographic questions. Participants were offered the chance to win an iTunes voucher as an incentive to respond to the survey, and/or a fact-sheet with the preliminary results of the survey (see Appendix C for the survey questions and Appendix D for the fact sheet).

SurveyMonkey (surveymonkey.com) was chosen as the instrument for the survey because of its ease of use in terms of setting up the survey online, and the effectiveness of the end-user interface. Use of an online data-gathering instrument also facilitated distribution of the survey and offered browser-based data collection and basic analysis tools. A subscription for three months was purchased, during which time the survey questions were imported and tested, the survey piloted with volunteers, and participants responded.

Pilot study, validity and reduction of unnecessary bias

Before implementation, I piloted the survey to test face validity. Six participants were invited to assist with reduction of author-bias, improve question

clarity, and identify likely problems or misunderstandings. This included testing the effectiveness of open form questions as a means of reducing bias from the closed form questions. Following pilot testing, the survey was adjusted in light of the feedback. (Any other issues around unnecessary bias are addressed in sections 3.2.4, Position of the author-researcher, and 8.12, Limitations of the research.)

Participants and recruitment

Participants came from a broader sample of higher education practitioners than those recruited for somewhat similar research conducted in the UK and previously in Australia (Fryer, 2006a; McWilliam & Dawson, 2007). In the earlier studies, exemplary teaching fellows were targeted for their opinions about creativity. For this study, a convenience sample of those who teach, manage, support, research in, and/or lead learning and teaching was recruited. This included lecturers, some support staff, and academic staff developers and educational developers/designers (see section 4.2 for demographics).

Recruitment was by email advertisement and, with permission, two Australasian professional association lists were targeted (*ascilite* and *HERDSA*)[9]. As a consequence, the survey reached those with a special interest in the teaching, development and scholarship of higher education, in a cross-section of disciplines and, in the case of those from *ascilite*, those with a special interest in technology in learning and teaching. In addition, distribution of the recruitment advertisement was encouraged through two faculty lists at QUT (Creative Industries and Education), and via further snowballing[10] recruitment techniques.

Participants were drawn from Australian higher education, with the exception of a small proportion of New Zealanders (3%) who contributed to the survey[11]. In terms of disciplinary background, educators, academics and professional staff in the creative industries, the arts and humanities, health, medical and social sciences, engineering and IT, and business responded to the survey.

[9] *ascilite*: Australasian Society for Computers in Learning in Tertiary Education; HERDSA: The Higher Education Research and Development Society of Australasia

[10] Recommendations to known colleagues who forwarded the email on to others.

[11] This was due to the Australasian focus of the two professional association email lists.

The survey was implemented in April and May of 2012. To maximise response rates, the survey was timed to open after the first few weeks of semester 1, when teaching was somewhat settled and staff presumed to have time to respond to a survey.

3.3.2 Data Collection: Case studies

Definition

Yin (2009) defines a case study as an empirical inquiry that "investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 18). This was the context for this study, where the phenomenon was the slippery notion of creativity, observed and explored within the problematic technology-enhanced learning environments that constitute higher education. Thomas (2012) argues that a case study is not a method; it is a focus. Hence, employing a case study focus I integrated multiple methods of data collection in order to explore the phenomenon from different angles, analysed the qualitative data using Thornberg's (2012) *informed grounded theory* methods, and maintained a holistic focus for the case studies.

Purpose and rationale

The purpose of the case studies was exploratory rather than evaluative or explanatory. The aim was to explore the views, motivations and educational methods of selected exemplary higher education practitioners, to build a picture of their creative design processes in context. This also included students' responses to those designs. The differences and similarities between cases, the variation in approaches to creativity and the "specificity" of each case (Gillham, 2000) uncovered valuable exemplars and heuristics for practice. The value of using case study methods for research into creativity has been confirmed by Weisberg (2006), a key researcher in the field of creativity; Swirski, Wood and Solomonides (2008) from the discipline of business; and Goodyear, Banks, Hodgson and McConnell (2004) in the field of technology-enhanced learning and new HE pedagogies. The findings from the case studies can be regarded as generalisable to theory (not populations) and sufficiently flexible and adaptive to apply in other contexts (Barab & Squire, 2004). The

approach was inductive for the case study research, and the aim was to generate theory and design principles rather than test a hypothesis. The cases addressed all three research questions.

Implementation

As previously mentioned, the case studies were designed within a concurrent triangulation design frame (Figure 3.1). While the cases were independent of the survey in that I did not rely on the results of the survey before commencing data collection, data gathering for the cases commenced after the survey had been implemented (see timeline, Appendix B).

All the case study data was collected between December 2012 and December 2013. Cases 1 to 3 were explored during semester 1, 2013, and cases 4 and 5 in semester 2 of the same academic year. Each case was bounded by a twelve- to thirteen-week university semester providing a snapshot of pedagogical practice at that time.

Typical of case study research, my approach was recursive (Thomas, 2012), as one design decision influenced another. For example, the first case study (creative writing) was regarded as a pilot study. This case influenced the conduct of subsequent cases providing information on, for example, successful strategies for staff and student participant recruitment, information about access to password protected unit websites on university learning management systems, appropriateness of interview questions and relevance of the research questions. So while the research design for the case studies was planned in outline from the beginning, it was adjusted as the research evolved, and the demands of ongoing reflection and theoretical sampling demanded, "letting the research guide the data collection" (Strauss and Corbin, 2008, p. 157). The recursive process was repeated until no new data emerged, that is, within the limits of the semester study period allocated for each case, without disturbing normal classroom procedures (online or offline), and within the scope of a doctoral thesis study.

Multiple methods

The methods used to gather data for the case studies included one-to-one semi-structured interviews with unit coordinators, and one-to-one or group interviews

(focus groups[12]) with tutors and students (separately interviewed), classroom observation (either direct or participatory, face-to-face or online, lectures and tutorials), field notes, and informal reflective conversations with unit coordinators, either face-to-face, or via email and phone. Examples of unit outlines, tasks, and assessments were collected. In three cases (2, 4 and 5) some observation of student work was possible. As learning design patterns for each case did not exist, these were constructed in consultation with unit coordinators. The learning designs were summary representations of learning activities in text, flow chart and diagrammatic form, and provide a means of representing pedagogical patterns of creative tasks.

During classroom observation, my status varied between observer and participant observer, depending on the circumstances. For example, for two weeks I observed role play exercises in architecture tutorials (case 5). As a participant observer I accompanied the unit coordinator from class to class as she pretended to be a demanding client negotiating a design brief with a firm of architects (groups of students in role play). This immersive (and fun) participant observation contrasted with other sessions where I sat at the back of huge lecture theatres or crowded tutorial rooms, somewhat unnoticed, observing class.

Access to tutorials and online classrooms varied. Some of the constraints included university timetables, tutorial room capacity and university security policy regarding guest access to unit websites on learning management systems. In addition, the cases were geographically dispersed: two in Queensland, two in New South Wales and one in Victoria. However, in all cases, the unit coordinators and tutors were extremely helpful and accommodating. Where access to unit websites and discussion boards proved difficult to arrange, access in some form was organised so that I could, for example, review content, download recorded lectures, visit online discussion boards (limited), join restricted unit Facebook pages, and review blogs. Case 4, a fully online unit, was the only case where classroom observation was not possible other than during the interview with the unit coordinator.

[12] The aim was not to seek consensus during group tutor or student interviews, but to look for variation and difference, so the focus groups are more accurately described as group interviews.

As the researcher, by entering into participants' environments, I was able to reflect on issues with teachers and students and temporarily became part of that space. Meaning was constructed intersubjectively by both parties to greater and lesser degrees, depending on the data-gathering methods employed and the context. Either intentionally or unintentionally, this methodological approach encouraged reflection on, and in, practice (Chivers, 2003; Schon, 2011) by both practitioners and myself as the researcher. This mutual benefit meant that I was not merely "taking" from research participants, and, as one interviewee observed: "It's not just one way you know" (Alex, case 3). Where applicable and appropriate, I gave participants generalised and anonymous feedback on the research outcomes, especially where, for example, student feedback could be used to inform future learning and teaching practice.

Criteria for the choice of cases

The criteria used to select the case studies are provided in Table 3.1. A purposive sample of practitioners who had "experienced the phenomenon" (Creswell, 2009, p. 17) was selected: that is, academics who were known to teach creatively and for creativity, and known to be "excellent" teachers (see Appendix J for a list of "excellent teaching" characteristics). The sample was designed to maximise the possibilities for cross-case analysis, demonstrate exemplary creative pedagogical practice, provide variation in delivery mode, and address the research questions. Finding the best mix of cases to meet these criteria was not simple.

Table 3.1
Criteria for choice of case studies (A and B)

A. A representative sample maximising the possibilities for cross-case analysis
1. Set must addresses the research questions.
2. Maximum of 5 cases, so as to fit within the scope and time constraints of the PhD.
3. Cases should demonstrate a range of examples from a mix of disciplines. To maximise variation and cross-case comparison: • At least 1 example from industrial design or architecture because of the emphasis on design thinking, paralleling research interest in design thinking from a pedagogical perspective; • One example of role play because of its creative pedagogical interest; and • 2-3 examples that make exemplary use of networked learning technologies–online or blended learning, and/or social media.
4. Each of the cases will be a unit of study, undergraduate or postgraduate, designed by an academic in higher education. Desirable but not essential: the unit runs "live" during the data-gathering period.
5. Access to the unit should be relatively straightforward and cause little if any disturbance to routine teaching activities. Recruitment of students should be relatively uncomplicated.
B. Examples demonstrating exemplary creative pedagogies
1. Stated learning outcomes: The unit should either explicitly or implicitly encourage student creativity.
2. Evidence of aligned pedagogical design: Design of the unit should demonstrate creative input by academic who created it, or by staff member who continues to evolve and teach the unit. "Input" relates to any of the following: pedagogical aims, learning and teaching strategies, assessment, use of ICTs, collaborative networking technologies.
3. Recommended by peers: Trusted peers who testify to the value of the example.
4. Exemplary use of technology: Each case should demonstrate exemplary use of digital technologies. This does not only mean high-tech use; simple, elegant solutions are highly desirable.

The teaching perspective

During semi-structured interviews with unit coordinators and tutors, I asked questions about their motivation for teaching creatively and fostering student creativity, creative activities undertaken with students, barriers and enablers to creativity (e.g. pedagogical, logistical, social, cultural, environmental, technical), the

impact of ICTs and delivery mode, and student responses to activities and the approach to promoting creativity. The unit coordinator typically demonstrated the unit website to me during the interview. Interview questions and their relationship to the research questions are presented in Table 3.2.

The questions asked varied according to participants' responses, but overall covered roughly the same line of inquiry. Questions for tutors were modifications of questions put to unit coordinators, acknowledging that tutors have little control over the pedagogical pattern and curriculum set by the coordinator. Two unit coordinators acted as tutors as well as having responsibility for unit supervision (cases 1 and 4). Interviews with unit coordinators were conducted face-to-face and one-to-one, but tutor interviews were conducted either individually or in groups, depending on availability, and could be face-to-face, or via Skype or phone.

Table 3.2
Unit coordinator and tutor interview questions and relationship to research questions (RQs)

Interview questions	Relationship to RQs
1. Do you ask your students to "be creative" in your unit of study/teaching? Do you use these words or some other terminology?	RQs 1, 2
2. Why do you want students to be creative (or innovative, or think differently in new and novel ways)? What is your motivation?	RQs 1, 2
3. What do you expect of students when you ask them to "be creative"? Do you think students can learn to be creative?	RQs 1, 2
4. Can you describe one or more creative activities that you have designed for students? What problems or issues did you encounter?	RQs 1, 2, 3
5. How did students respond to these activities?	RQs 1, 2, 3
6. What is the role of technology (ICTs and delivery mode) in these activities?	RQ 3

Note: See Appendix E for follow up questions.

The student perspective

To gain a sense of the efficacy of teachers' creative pedagogies, and how students responded to these activities, students were also invited to individual or group interviews (Skype, phone, or face-to-face). One distance student was interviewed via email. The student interviews, along with the academics' interviews

helped to provide something of a 360-degree view of each case. Semi-structured interview questions were used, and students' views sought on what "being creative" meant to them, their response to a creative task set as an assessable or non-assessable activity, supports they sought to help them with creative tasks, including mentors and networks of peers, and the impact of digital technologies (ICTs and delivery mode). The student interview questions are summarised below in Table 3.3, showing the relationship of the questions to the research questions.

Table 3.3

Student interview questions and relationship to research questions (RQs)

Interview questions	Relationship to RQs
1. In your course you are expected to demonstrate some sort of creativity. Can you describe one of those creative activities, and what you learnt from it?	RQs 1, 2, 3
2. What does "being creative" mean to you?	RQs 1, 2
3. What technologies did you use for this task? If any, how effective were they?	RQ 3

Note: See Appendix E for follow up questions.

3.3.3 Quality of the Research

Quality typically has different meanings for quantitative and qualitative researchers. Qualitative researchers, for example, often prefer terms other than validity and reliability, terms used by quantitative researchers to indicate the worth, value and standard of their research (e.g. Corbin & Strauss, 2008; Golafshani, 2003; Lincoln & Guba, 1985). So while I have leaned towards qualitative measures of quality for this mixed methods research, quantitative indicators such as construct validity (in its broadest sense) and internal validity have also been attended to. Reliability, ensuring the quantitative data was stable and consistent, was guaranteed as far as possible given that the survey captured educators' opinions at a particular place and time.

More generally the overall quality indicators for the research have been taken from grounded theory, in particular, Glaser's four elements (Glaser, 1998; 1978), namely fit, relevance, workability and modifiability. Every attempt has been made to fit the theory to the data, not vice versa; the study is relevant in terms of real world

concerns, not only academic concerns; the theory is workable in that it explains the problem and situation from which it was derived so that others can better understand the context of the findings; and the theory is modifiable in that it is expected to be applicable to other settings, with adjustments. The learning designs and design principles support this transferability. In addition, other quality measures as recommended by Thomas (2011, p. 68) were observed, including careful choice of the research questions, inclusion of multiple sources of evidence (triangulation), thorough documentation, and justification of all data collection and analysis processes. Finally, I regularly consulted with my supervisors who constructively challenged my methods, research design and analysis at all stages of the project.

3.3.4 Ethical Considerations

A low-risk ethics application for all aspects of the research was submitted to the QUT Ethics Committee on 12 December 2011. Ethical clearance for the research was granted on 12 January 2012 for a period of three years, to 12/01/2015: QUT Ethics approval number–1100001543. My supervisors were named as co-researchers for the project. All participants in the study were recruited as volunteers, and every effort was made to ensure they were informed of the nature of their participation and commitment before participation. Emailed advertisements, flyers, information sheets, and the online survey entry page provided details of the research for participants in each study where relevant. Participants were advised that they were free to withdraw from the research at any time without comment or penalty. The letter of approval from the Ethics Committee is included as Appendix F, along with the participant information and consent forms.

3.4 METHODS: DATA ANALYSIS

3.4.1 Survey Analysis

The quantitative and qualitative data gathered via SurveyMonkey was downloaded and analysed with the aid of Excel and SPSS (Statistical Package for Social Sciences). Findings were queried and analysed using descriptive and inferential statistical methods for measures of central tendency and, where relevant, group comparison using non-parametric tests. Non-parametric tests (see Pallant, 2011) included Mann-Whitney U tests for differences between two independent

groups on a continuous measure; for example, gender differences regarding views on whether or not creativity could be taught. Kruskal-Wallis (KW) tests were used to compare continuous variables across three or more groups; for example, to compare scores on the five-point Likert scale in order to search for any differences between disciplines regarding whether or not creative thinking was differentiated from critical thinking. Friedman tests were used to compare the same sample of participants' scores over two different questions (e.g. one question about beliefs and one about educational practice).

Qualitative data from open-ended questions were uploaded into NVivo (qualitative data analysis software), for coding and categorising using informed grounded theory coding methods–as appropriate. This data was then mixed with case study data to formulate theory. An explanation of the steps taken during this phase of analysis is provided in section 3.4.2, and discussion of the survey findings and analysis is in chapters 4 and 5. The survey analysis addressed all three research questions. Limitations of the survey and the inquiry in general can be found in section 8.12.

3.4.2 Case Study Analysis: Informed Grounded Theory

Background and rationale

The case studies were analysed using a variation of grounded theory proposed by Thornberg (2012) known as *informed grounded theory.* This more flexible and constructivist version of grounded theory allows for early review of the literature, rather than delay until initial data analysis has been completed, as in traditional grounded theory. Thornberg's point of departure from other grounded theory (GT) methods is discussed below, but first a definition, and background, to GT.

Glaser and Strauss first collaboratively derived and articulated grounded theory in the 1960s (Glaser & Strauss, 1967). Charmaz (2011) describes GT as:

> A method of conducting qualitative research that focuses on creating conceptual frameworks of theories through building inductive analysis from the data . . . The method favours analysis over description, fresh categories over preconceived ideas and extant theories, and systematically focused sequential data collection over large initial samples. (Charmaz, 2011, p. 187)

The paths of the founders of the methodology diverged in the 1980s. While Glaser remained close to the original ideas of constant comparative methods of data analysis, discovery of theory, categories emergent from the data, and rigorous coding methods (Charmaz, 2011; Glaser, 1998), Strauss became concerned with verification of theory and very specific methods of coding (Charmaz, 2011). Along with Juliet Corbin (Corbin & Strauss, 2008; Strauss & Corbin, 1990) Strauss followed more interpretive approaches to GT, influenced by pragmatism[13] and symbolic interactionism[14].

Since then, *constructivist* grounded theory, with foundations in pragmatism and symbolic interactionism has evolved (Charmaz, 2011). Whereas Glaser and Strauss emphasised the *discovery* of theory, Charmaz (2011), for example, describes theory as being *constructed*. Theory, from the latter standpoint, emerges from interactions of the researcher, participants, and the social world. It is interpretive, and multiple perspectives and realities are assumed. Thornberg (2012) sits within this camp, although his views on the place and function of the literature review are a further development on Charmaz's position.

By combining Charmaz's and Thornberg's theoretical positions I found a workable method for analysing my case study data. I relied on GT techniques such as constant comparative methods, generation of preliminary theory from the earliest stages of the inquiry, memoing (writing reflectively, early and often), and development of theory to the point of "theoretical sufficiency" (Dey, 1999, p. 257) to ensure the quality of themes, categories and concept development. This was completed without becoming overly preoccupied with coding and techniques as, in accord with Charmaz, I view grounded theory methods "as a set of principles and practices, not as prescriptions or packages" (Charmaz, 2011, p. 9).

[13] Pragmatism: An American philosophical tradition. Reality is conceived to be open to multiple interpretations, and people are assumed to be "active and creative". "Meanings emerge through practical actions to solve problems", and truth is "relativistic and provisional" (Charmaz, 2011, p. 188).

[14] Symbolic interactionism: derived from pragmatism. The theory assumes that people "construct selves, society, and reality through interaction", and "meanings arise out of actions, and in turn influence actions". "Individuals are active, creative, and reflective" and "social life consists of processes" (Charmaz, 2011, p. 189).

Rigorous qualitative data analysis is acknowledged to be a time consuming practice, and there is a danger of taking shortcuts, over simplifying findings and allowing the study to become researcher driven rather than data driven (Grbich, 2009). As grounded theory methods incorporate well-documented steps and systematic coding requirements, the method itself helped guard against this pitfall. The goal of theory generation in GT also avoids one of the concerns with interpretive inquiry, that is, of being overly descriptive.

Early integration of the literature review

Traditionally in grounded theory the literature review is delayed until after analysis, and "the analytic core of categories has emerged" (Glaser & Strauss, 1967, p. 37). This is "to assure that the emergence of categories will not be contaminated" (p. 37). This *tabula rasa* approach is supposed to ensure that theory is inductively built in its purest form from the data, not polluted by ideas from other sources. However, for my research, it was essential that I undertook a review of the literature in order to reduce the risk of unintentionally replicating past research, as the literature on creativity is vast. In addition, my own research findings tell me that creativity does not exist in a vacuum; it is always built on the ideas of others, no matter how inspired. Therefore, I argue that research, as a creative endeavour, needs to be built on a sure footing, and capitalise on prior research from the outset. Without a literature review, for example, I would not have been aware of similar research into creativity in higher education (e.g. Fryer, 2006; McWilliam & Dawson, 2007), and where gaps in the literature might suggest potential areas for new research. Importantly, we come to research with our own already established knowledge base. This cannot be dismissed at will, on the supposition that it might contaminate analysis of new data. As Thornberg argues, early review of the literature is likely to help the researcher avoid known "conceptual and methodological pitfalls" (Thornberg, 2012, p. 245), and increase theoretical sensitivity to the data. In addition Dey concludes that, "it is better to make ideas and values explicit rather than leaving them implicit and pretending that they are not there" (Dey, 1993, p. 229). In a creative approach to the literature review, Thornberg recommends using the literature as a source of inspiration for drawing insights from the data, and as a heuristic tool. Consequently, for this study, review of the literature continued

throughout the inquiry as data gathering and analysis demanded. In so doing I continually questioned assumptions and conclusions, whether or not they were generated from my own data or others' theoretical positions.

Case analysis steps outlined

The steps for the case study analysis are illustrated in Figure 3.3 and Table 3.4, and explained in the following sections.

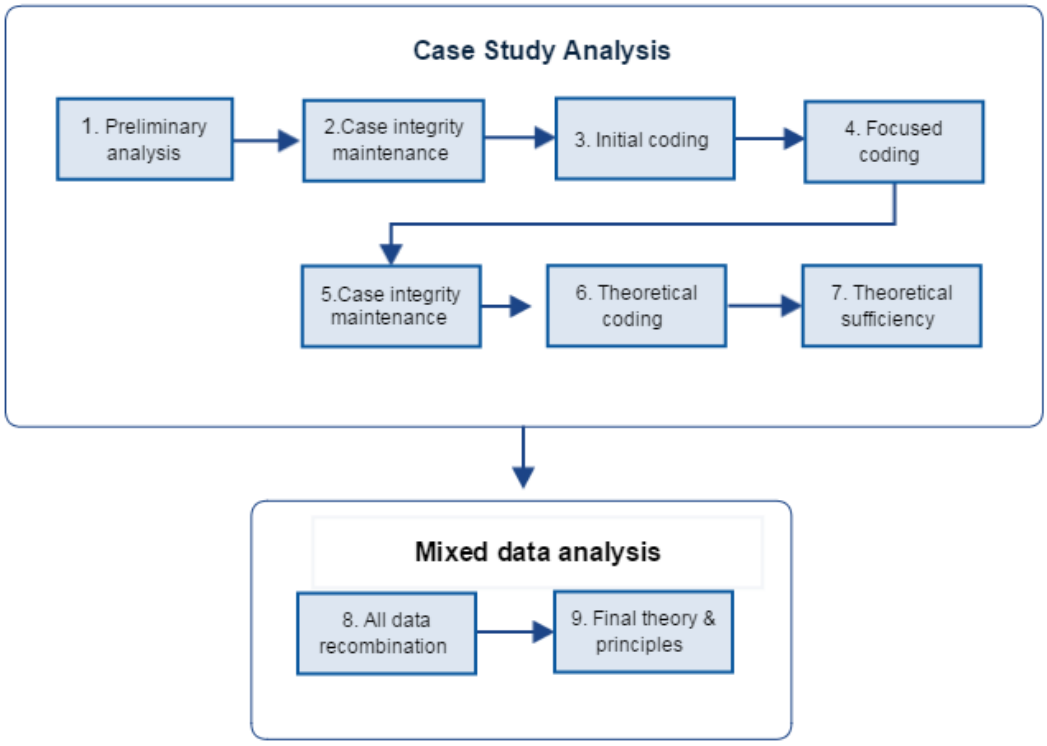

Figure 3.3. Steps in the case study analysis

Table 3.4

Qualitative data analysis steps for cases, based on informed grounded theory methods

Step	Description
Preliminary analysis	Cases recorded and reviewed case by case as data gathered. Preliminary notes, concepts maps, conceptual memos, and journal entries added to case files. Temporary matrices and tables comparing preliminary findings from the cases constructed. GT theoretical sampling continued throughout analysis.
Case integrity maintenance	Recorded audio interviews (individual and group) transcribed in conversation mode. Print and audio versions compared and edited for accuracy. Interviews listened to repeatedly, notes taken, key quotes and points selected, memos for each interview and case written with a focus on creating a holistic picture of each case. Temporary theoretical insights recorded, and transcriptions, notes and memos uploaded into NVivo in separate case folders.
Initial coding	Unit coordinator, tutor and student interviews coded on a case-by-case basis using GT methods (incident by incident and/or line by line). Code names derived from the data, not an external framework. The coded data viewable as single cases or multiple case categories. Coding re-examined and adjusted with each new reading of data. *In vivo* coding completed after initial coding. Coding choices re-examined and discussed with supervisors.
Focused coding	Initial codes synthesised to the next level of abstraction, building concepts. Constant comparative methods used, e.g. code to code, code to original data, data to data, data with emerging categories. Categories derived.
Case integrity maintenance	Preliminary description and explanation of each case drafted in narrative form based on issues emerging from the data and focus of research questions. An initial map of concepts emerging from the narratives was drafted and a representative learning design drafted for each case.
Theoretical coding	Relationships between categories developed. Cross-case analysis completed, comparing, contrasting, refining and synthesising findings. Quality indicators (credibility, originality, resonance and usefulness) attended to as emerging theoretical constructs challenged and revised, scanned for inaccuracies and unsupported generalisations, robustness of argument and alternative explanations. Design principles re-visited and revised. Findings discussed with supervisors.
Theoretical sufficiency	Development of theory from the data and conceptual categories to the point where theory is sufficiently well elaborated and defined.
Mixed methods recombination	Case study and survey findings combined, synthesised and evaluated.
Theory and design principles	Theoretical position and design principles refined and completed.

Preliminary case analysis and case integrity maintenance (steps 1 and 2)

To preserve the integrity of each case I constructed descriptions from the individual perspective, and then the collective. Before segmenting the case data, audio transcriptions of interviews were checked for errors with the original recordings. This entailed multiple sessions listening to the interviews as a whole, followed by reference to other interviews within the case set, plus any relevant documents, case notes and memos. New memos were then written for each interview, in addition to recording key points and selecting illustrative quotes. The memoing and note taking were then repeated at the case level. I used NVivo software to assist with the management and coding of data sets. Case study data was maintained in separate NVivo folders and coded so that records could be viewed on a multi-case or individual case basis. GT "theoretical sampling" was continued as required through all stages of analysis (see step 7).

Initial coding and focused coding (steps 3 and step 4)

Interview transcripts were closely coded in NVivo. As recommended by Charmaz (2011), initial coding was rapid and code names kept simple. A combination of incident-by-incident and line-by-line coding was employed. For example, line-by-line coding was appropriate for questions such as, "What does creativity mean to you?", but incident coding was more appropriate for questions about creative tasks (see Table 7.1 for examples of coding). *In vivo* coding was carried out after the initial coding to collect special participant constructs and terminology. All coding methods and categories of description were iteratively developed and discussed with supervisors to ensure quality.

Focused coding followed initial coding. Categories were developed from the initial codes and examined as part of a multi-case set and at the level of each case. Concepts, relationships and hierarchies emerged through the on-going process of constant comparison. Relationships between categories were developed.

Case integrity maintenance (step 5)

After initial and focused coding a narrative was written for each case including description, explanation, evaluation and synthesis. The initial concepts that emerged

from the narratives were mapped and learning designs drafted of a representative task or assessment.

Theoretical coding (step 6)

Theoretical coding allowed for specification of "possible relationships" between the categories developed during focused coding (Charmaz, 2011, p. 63). Categories and subcategories were examined, synthesised and linked to develop theory, and referenced back to the case narratives. During this lengthy process, constant reference was made to the original data so that notes, memos, tables and diagrams showing the relationship of concepts one to another were constructed. I did not adhere to the somewhat prescriptive process of axial coding, a step preferred by Strauss and Corbin (1990) to integrate the previously fractured data, because, like Charmaz (2011) I preferred a more flexible approach where I concentrated on the data rather than the techniques. The construction of case narratives also ensured a holistic approach to the data analysis. As Glaser (1978) has argued, the theoretical coding stage is an integrative process that renders axial coding unnecessary.

Theoretical sampling and theoretical sufficiency (step 7)

Theoretical sampling is the term used by grounded theorists to denote the process of "seeking out people, events or information to illuminate and define the boundaries and relevance of the categories" derived from the analysis (Charmaz, 2011, p. 189). It began from the first steps of analysis, as recommended by Strauss and Corbin (2008). As Charmaz (2011) argues, theoretical sampling is not a matter of finding more cases to complete the sampling process, but rather a process of checking the fit of the categories with the theory. In my research, for example, it meant returning to the unit coordinators with further questions about their strategies for promoting creativity, as the development of theory progressed; or referring to unit documents for corroboration of my interpretation of concepts and theoretical standpoint. Through a process of moving between data, categories, memos, case narratives, figures and diagrams, the final theory and design principles emerged. At the point of "theoretical sufficiency" (Dey, 1999, p. 257), sampling was terminated when the concepts were sufficiently well defined. While traditionalists call this point "theoretical saturation" (Corbin & Strauss, 2008; Glaser & Strauss, 1967), Dey

(1999), argues this is misleading as categories emerge as "suggested" by the data, not at a point of "saturation".

3.4.3 Combined Analysis of Data and Synthesis of Design Principles (steps 8 and 9)

In keeping with an integrated mixed methods approach, once all the qualitative case study data had been analysed, qualitative and quantitative results and findings were combined (see chapter 8). From this the final theory and design principles emerged. Nieveen, McKenney, and van den Akker (2006) describe design principles as "heuristic guidelines to help others select and apply the most appropriate knowledge for a specific design task in another setting" (p. 153). The purpose of design principles, using Phillips, McNaught and Kennedy's (2012) explanation, is to: (a) make recommendations for practice, based on the literature and analysis of the data collected in this study; and (b) make a contribution to theory in this domain. The principles derived from the research are expected to prove useful to practitioners in other disciplines or contexts. It should be noted that the principles were not tested in practice as this last step was beyond the scope of the study. It would normally be followed if the research paradigm adopted were one of action research or design-based research (Reeves, Herrington, & Oliver, 2005). This is an area for future research.

3.4.4 Evaluation of the Learning Designs

A learning design (as an *artefact*), representative of one activity, was created for each case. The learning designs appear in two pattern forms: firstly as a visual representation (see Figures 6.2, 6.3, 6.4, 6.5, 6.6) and secondly as a longer text-based pattern (see Appendix I). These visual representations of a sequence of activities focus on what the learner does and where some of the expected creative processes typically occur during that activity. The more general *process* of designing for learning is synthesised in the discussion of the cases in chapters 6 and 7. Analysis and evaluation of the learning designs was informed by the work of Phillips, McNaught, and Kennedy's (2012) who argue for holistic evaluation of learning designs in technology-enhanced learning (TEL) environments, and not merely a focus on the technologies used.

3.5 CHAPTER SUMMARY: RESEARCH AS A CREATIVE PROCESS

In summary, the mixed methods approach served the purposes of the inquiry well. The use of an online survey meant that the reach of the data collection was broad, and ICTs were used to help achieve this. The quantitative data was analysed descriptively and inferentially, and this allowed for a level of generalisability not achievable with case study findings. The case study data was gathered via multiple means and allowed for detailed descriptions to be generated from pedagogical documents, semi-structured interviews with teachers and students, classroom observation and field research. Data gathered by these methods allowed for collection of detail not possible through survey methods. The use of a modified version of constructivist GT, *informed grounded theory* (Thornberg, 2012), ensured the research did not remain overly descriptive, and theory was constructed, not discovered. The use of informed GT also allowed for the literature review to be conducted throughout the research process, not only during the analysis phase as recommended with traditional GT. Ethical concerns were addressed, and clearance from the QUT Ethics Committee contributed to the quality of the conduct of the research. The methods and processes adopted ensured that theory was derived from the data, and that the learning designs (as artefacts and accounts of process), and the design principles could evolve naturally from the data.

Research is undoubtedly a creative process, as Torrance (1995) confirms, even though historically research and creativity have not always been related (Runco & Albert, 2010). This account of the methodological approach has demonstrated the iterative and dynamic processes that constitute research. It shows that research of this kind tends to move through stages typically encountered during the creative process, namely problem finding (imagining the research), problem definition, ideation (generating and playing with multiple ideas and methodologies), exploration of perspectives during iterative data gathering and analysis, and testing of preliminary theoretical statements until a final theoretical position is reached. Experts in the field then assess the worth and value of the final product.

While the methodological processes were purposely *designed for*, not all plans could be carried out as imagined or intended, and the inquiry changed in response to that: the case study selection slightly altered the focus of the inquiry;

methods chosen for data analysis were amended in light of the data collected; and while the congruent mixed methods design adopted meant that the survey and the case study phases were conceived of as occurring in parallel, in practice they followed one another chronologically. The need to work within a time and resource bounded framework, and to be adaptable and responsive to conditions and outcomes is typical of the creative process. A diagrammatic representation of the iterative processes of this research design is presented later in chapter 8 (see Figure 8.2).

The next chapter reports on the findings from the survey. Here the views of practitioners regarding teaching creatively and for creativity are documented, along with perceptions of the value of creativity to them and their students, and the implications of certain contextual issues typically encountered in technology-enhanced learning environments.

Chapter 4 Wot's in a name? Survey Results

Wot's in a name? Wot's in a string o' words?

–C. J. Dennis, *The Play*[15]

4.1 PURPOSE AND STRUCTURE

As a means of determining what *is* in a name (i.e. in the word creativity), the survey proved to be a valuable tool. A general sample of educators responded to questions regarding creativity and related teaching issues. This included questions about creativity as a concept and its value in the academic environment and context-related questions such as the impact of technologies, class size, and professional scope and conditions for promoting creativity. Quantitative data was analysed using descriptive and inferential statistical methods, and qualitative comments from open-ended questions analysed using informed grounded theory methods (where sufficient qualitative data supported this process).

There are ten sections in chapter 4. Demographics are presented first, then participants' conceptions of creativity and its value to them as individuals and professionals within an organisation. Participants' views on the conditions and contexts for developing students' creativity follow this, including assessment of the barriers and enablers within the professional environment that impact creative development. Significant findings about the relationship between creative thinking, critical thinking and problem solving are recounted in section 4.6. As participants were asked for examples of creative teaching strategies and activities, these are summarised in section 4.7. The results section concludes with the findings about participants' perceptions regarding the impact of technology on fostering creativity with reference to TEL environments and delivery mode (section 4.8), large class sizes, and networks that provide possible connections to peers and creative mentors (section 4.9). The chapter concludes with a summary of what creativity means to a

[15] The quote is from the poem "The Play", by Australian author, C. J. Dennis (1915, p. 31), in the humorous verse novel, *The Songs of a Sentimental Bloke*. In "The Play", Bill, a gang member, takes his sweetheart Doreen to the theatre to watch Shakespeare's *Romeo and Juliet*. He reflects on the importance of naming conventions, and how actions in one context can be coded and interpreted differently in another, e.g. fighting may be classed as valour in one setting but thuggery in another.

significant sample of educators. The survey addresses research questions 1-3, and discussion of the results follows in chapter 5.

4.2 DEMOGRAPHICS

4.2.1 Age, Gender and Previous Studies

One hundred and seventy participants responded to the online survey: 52.9% female, and 37.06% male. Comparison with Australian higher education statistics (Australian Bureau of Statistics, 2012) indicated a somewhat similar gender balance, although males were slightly under represented in this sample (national figures: female 56%, male = 44%). 82.35% of respondents were 35 years or older and the majority, 35.9%, were in the 45-54 year age bracket (see details Appendix G, Table G1).

The demographics for age and gender were similar to those of participants in an earlier Australian study, where the views on creativity of 37 national teaching award recipients were analysed (McWilliam & Dawson, 2007). The 2007 Australian study was modelled on research in the UK (Fryer, 2006a) where 94 National Teaching Fellows were surveyed. Although my study and the two previous studies have similarities, including participants from a mix of disciplines, there were still differences in the target population, sample size and the focus of inquiry. Appendix G, Table G2, sets out the differences. This study did not aim to replicate or verify either of the earlier studies, but the previous research is acknowledged as important, and referenced for comparison where relevant.

4.2.2 Institutional Origins and Disciplinary Groupings

The majority of respondents (82.9%) identified themselves as working in Australian higher education (HE) institutions (3.5% from New Zealand HE, other = .6%, unspecified = 12.4%, n=170). Thirty-eight Australian higher education institutions were represented in the sample (see Appendix G, Tables G3 and G4 for further details).

The majority of respondents came from the arts, humanities and creative industries (31.2%). This was expected given the focus of the inquiry and the traditional interest in creativity from within these disciplines (see e.g. Fleming, 2008;

Robinson, 2011; Weisberg, 2006). It also matched the disciplinary focus of the case studies (creative industries/social science). Other respondents were drawn from disciplines as indicated in Table 4.1. Disciplines were self-reported, and for the purposes of analysis, grouped into six categories, then further aggregated into three main groups: arts, education and science.

Table 4.1
Discipline groups (N=170)

Aggregated groups	%	Original discipline groups	%
Arts	38.2	Arts, humanities & creative industries	31.2
		Law & business	7.1
Education	28.8	Educational & academic development, & learning support	17.1
		Education faculty	11.8
Science	20.0	Science, mathematics, engineering & IT	11.2
		Health, medicine	8.8
Unspecified	12.9	Unspecified	12.9
Total	100.0	Total	100.0

4.2.3 Participants' Roles Within the University

Respondents were experienced educators: 73.1% were employed at lecturer level or above (excluding academic and educational developers), of which 50.0% were at lecturer or senior lecturer level, 21.6% at associate or professorial level, 13.5% as tutors or associate lecturers, and 12.6% in academic staff or educational development support roles (which can be either academic or non-academic roles). Some of the last group may have been actively teaching, and/or in advisory, support or learning and teaching development roles; however, this finer distinction was not discoverable from the data. Comparison with national statistics (Australian Bureau of Statistics, 2012) indicated that respondents were drawn from the higher end of the academic/professional scale (see Appendix G, Table G5).

The majority of respondents were engaged in teaching (38.8%, n=170), followed by staff, curriculum or educational development/designer roles (21.2%). The remainder were in educational leadership (14.7%), research (11.2%,) or consultancy roles (1.8%) (12.4% unspecified). Over two-thirds of respondents were employed full-time, 67.1%, 12.4% were part-time, 10% casual, and 0.6%

consultants. Compared with national statistics, the balance of full-time versus fractional employees in the survey was somewhat similar, although full-time employees were slightly under-represented (see Appendix G, Tables G6 and G7).

4.2.4 Years in Higher Education and Use of the Internet

Participants represented an experienced cross-section of higher education practitioners with roles in teaching, managing, leading, researching and/or supporting education. The mean number of years in any of these roles was 12.5, with a standard deviation of 8.3 years, the highest frequencies being 10 and 20 years, ranging over 35 years, from 1 year to 36 years in the sector.

Similarly, with regard to the numbers of years staff had spent using the Internet in the process of designing or teaching courses for higher education, the mean was 9 years, with a standard deviation of 5.7, a mode of 15, and a range of 30 (0 to 30) which, overall, suggests a high level of experience in teaching with Internet-based technologies (see Table 4.2).

Table 4.2
Experience in higher education learning and teaching, and years teaching with Internet

Item	n	Mean	Median	Mode	SD	Range
Years in L&T	151	12.52	11	10 & 20	8.34	35
Years using Internet	150	9.01	15	15	5.68	30

(For a list of all survey questions, item means and standard deviations see Appendix G, Table G18.)

4.3 THE CONCEPT OF CREATIVITY: " WOT'S IN A STRING O' WORDS?"

4.3.1 What is Creativity? What Does it Mean to You?

In order to determine whether creativity can be taught or designed for in higher education curricula, an important first step towards understanding was awareness of educators' conceptions of creativity. Consequently, the first question I asked participants was: "What is creativity? What does it mean to you?". I wanted to know what was in the name (creativity), and what "a string o' words" (Dennis, 1915) (being creative) meant in practice.

Using informed grounded theory methods for analysis of this question, (see section 3.4.2), I entered 156 responses into NVivo and coded line-by-line and for key words. Initial and focused coding revealed concepts of creativity as they emerged from the data rather than from known taxonomies derived from the literature. Meaning was assessed within context, not merely by assembling keywords or phrases, although keyword frequencies were collected to help identify word clusters. Nodes were grouped into categories, and categories iteratively and comparatively synthesised, with repeated reference to original statements.

Ten elements emerged as contributing to the notion of creativity. In order of relative weighting they were:

1. Process (e.g. making connections, playing, expression);
2. Ways of thinking (e.g. imagination, vision and fluency);
3. Originality and the unorthodox (difference, unexpected);
4. Product (the outcomes of creativity, tangible or intangible);
5. Problem solving;
6. Value;
7. Adapting and/or building on existing knowledge;
8. Context and domain;
9. Aesthetics and other dimensions; and
10. Disposition and personal qualities.

(See Table 4.3 for description of elements, sample key words and examples.)

Table 4.3

Elements contributing to the concept of creativity

Element	Sample key words	F*	Example
1. Process Activities that lead to creativity, e.g. responding to the environment, making connections, self-expression, design, generating and creating products (tangible or intangible), multiple responses, working within boundaries and across boundaries.	Play, experiment, respond, represent, express, inspire, collaborate, design, boundaries, risk, storytelling, passion, serendipity, organic	140	"Creativity means 'making', that is, it is an active notion, something engaging the wholeness of a person . . . Creativity can be the outcome of deep and intense study, practice and knowledge-making. It can also be the child of risk, experiment and serendipity." (#169)
2. Ways of Thinking Cognitive processes that include e.g. divergent, lateral and fluent thinking, making conceptual leaps, demonstrating imaginative vision, and seeing the world as nuanced and complex.	Insight, non-linear, divergent, complexity, fluency, higher order, vision, conceptual leaps, lateral, imagination, intuitive, emancipatory	116	"The ability to think outside the square, the ability to come up with a new way of doing or representing something, often in a way that crosses boundaries and engages people through a level of excitement. " (#137)
3. Originality and the Unorthodox New, novel and different ways of thinking, doing responding, presenting or envisioning. The originality may be novel for the individual or the context, tangible or intangible, the unexpected, and may challenge the norms of a domain.	Innovation, original, unexpected, fun, left field, alternative, "aha/wow", colour, extraordinary, crosses boundaries, not mass-produced, against tradition, alternative	106	"Imaginative, not traditional . . . applies ideas outside of the domain in which one is expected to draw upon. " (#89, nursing)
4. Product Notion that there is an outcome, effect, product or artefact of some kind. This may be tangible or intangible: a thing, an idea, an expression.	Artefact, solutions, technology, multiple, tangible, intangible, idea, unique, subjective, effect, operationalised	94	"Working from inspiration to develop workable and elegant solutions. " (#9, teaching & learning)

Element	Sample key words	F*	Example
5. Problem Solving Activities that involve solving problems and may incorporate notions of process and product.	Solutions, intuition, non-linear processes, as process & product	58	"Something that is produced not using an algorithm or formula." (#146, engineering & IT)
6. Value Value assigned to the outcome of creativity, meeting set requirements. It implies criteria for making judgements, and an audience.	Appropriate, audience, well suited, grabs attention, easily digestible, expectations, pleasing	26	"You know it when you see it. The expression of a person's vision that is creative because it is unique to them, yet speaks to the viewer/reader because it expresses something universal and spiritual." (#38, creative writing)
7. Adapting and /or Building on Existing Knowledge Activities, knowledge and skills that contribute to creativity, founded in knowledge and expertise.	Expertise, skill, skill, knowledge, renewal & repurposing, extension	19	"Creativity to me means invention or creation. Extension. Abilities to take a known <thing> and extend its application, purpose; or, recognition of alternate applications." (#147, mathematics)
8. Context and Domain Elements relating to context, e.g. discipline, field, domain, culture, institution, experience of which may be beyond one's own self, life, or life stage.	Discipline, field, context, organisation, protocols, human activity, more than one type	19	"For the artist it means different things in different stages of their working life . . . the creativity of the writing student for example, is different to the creativity of the acting student." (#61, drama)
9. Aesthetics and other Dimensions Dimensions of creativity that include or reject the sensory, emotional, and personal; perceived, felt and sensed, beyond purely cognitive processes.	Spiritual, colour, organic, body, heart, not limited to, beyond maker, universal	18	"Creativity, for me, involves a degree of other-worldliness, of storytelling and giving birth to something which is unexpected and beautiful, not just something new." (#24, media & communications)
10. Disposition and Personal Qualities Dimensions that relate to personal characteristics or talents, innate or developed over time.	Being open, having empathy, engaged, gifted, talented, motivated	12	"What happens when we let go of knowing, allow ourselves to be spontaneous, and accept a gift which may emerge to surprise us." (#98, music therapy)

Note: * F = Frequency, indicating the relative weighting of references to each concept at the coding nodes.

Elements were often combined in the descriptions or definitions of creativity: often three, four or more elements. The relative weighting of the elements was derived from frequencies found in the NVivo coding and, as the list above indicates, the five most commonly cited elements were *process, ways of thinking, originality and the unorthodox, product and problem solving*. While "value" was not necessarily explicitly stated in definitions it was often obliquely referred to using measures of worth such as "elegant", "pleasant", "appropriate" or "well suited". The elements least often referred to were disposition and personal qualities. Even aesthetic dimensions, such as "spirit", "soul", "body", and "otherworldliness" appeared seldom in the definitions. (See Table 4.3 for examples and Appendix G8 for succinct examples that demonstrate several elements combined in the one response.)

Given the context of the online survey, where a qualitative response was required to the opening question within a short 15-20 minute quantitative survey, the responses were surprisingly considered, insightful and detailed. Even for those in, for example, the creative industries, arts and humanities, who regularly grapple with the concept of creativity and promote creativity as part of their teaching remit and/or creative practice, the question may have been difficult to respond to at short notice. I had expected that some would feel "caught in the headlights", and be stunned into silence by the question. Not surprisingly, one respondent remarked: "Wow–the hard question first!", but then nonetheless produced a well-articulated response: "Creativity is the ability to be innovative and imaginative. It requires a strong foundation in knowledge and skills and then the ability to challenge these foundations in exceptional ways to set new directions" (#104 teaching & learning). Ironically another participant said that creativity was "ineffable" (#38, creative writing), and then she/he went on to illuminate creativity in a paragraph. The most sophisticated response was probably the following one provided by a practitioner from the visual arts. It references at least six of the ten elements (process, thinking, product, value, originality, problem solving, and personal characteristics).

> While highly individual motivation for creativity still defies neuro-scientific explanation, there is some consensus that creativity works as a way of thinking associated with: intuition; inspiration; imagination; ingenuity; insight; a novel and appropriate response to an open-ended task. The decisive phase of creativity is the capacity to: select, reshuffle, combine or synthesise already

> existing facts, ideas, images and skills in original ways. Skills such as pattern recognition, creation of analogies and mental models, the ability to cross domains, exploration of alternatives, knowledge of schema for problem-solving, fluency of thought and so on, are all creative dispositions or habits. Thus, creativity is the ability to come up with new ideas, to solve problems in original ways, and to stand head and shoulders above the crowd in terms of imagination, behaviour, and productivity. (#114, visual arts)

In all, 92% of respondents (n=156) were able to articulate what creativity meant to them.

4.3.2 Concepts of Creativity by Discipline Group

To determine if any disciplinary differences existed, I coded each of the definitions in Excel for the presence of the 10 elements listed in Table 4.3, and sorted them into aggregated discipline groupings (education, arts and science). This level of focused coding produced a marginally different relative weighting for the key elements, compared with coding exemplified by the NVivo coding in Table 4.4. However, the five most important elements remained *process, originality and unorthodoxy, product, ways of thinking, and problem solving* (see Table 4.4). It is significant that again, process was the most commonly cited element of creativity: 89.1% of participants referred to process either explicitly or implicitly, compared with *disposition* that was only referenced by 8.3% of participants.

In order to compare across discipline groups, the coded results of qualitative statements were then calculated as percentages *within* disciplines. For example, 87.8% of all participants in the education group made reference to “process”; 86.2% of all in the arts group made reference to “process”, and 79.4% from the sciences. “Originality” was somewhat similarly referenced across the disciplines, but the arts were less concerned with “product” than either education or the sciences. The sciences, however, were more likely to be concerned with “problem solving”, “value” and “adapting” previous work or ideas as elements of creativity than the other two discipline groups. The sciences also tended to specify contextual or domain relevant elements in their definitions, but were unlikely to mention aesthetics or dispositional characteristics (see Table 4.4).

Table 4.4

Elements of creativity referenced within definitions of creativity

	Percentage of participants who referred to identified elements %				
	*All disciplines (n=170)	Education (n=49)	Arts (n=65)	Science (n=34)	Unspecified (n=22)
Process	89.10	87.76	86.15	79.41	59.09
Ways of thinking	74.40	61.22	65.31	52.94	27.27
Originality	64.70	71.43	70.77	67.65	45.45
Product	54.50	69.39	55.38	61.76	31.82
Problem Solving	26.90	20.41	16.92	35.29	0.00
Value	16.70	12.24	12.31	20.59	4.55
Adapting	15.40	10.20	13.85	23.53	9.09
Context & domain	14.10	6.12	12.31	23.53	4.55
Aesthetics	12.80	24.49	18.46	2.94	4.55
Disposition	8.30	12.24	7.69	0.00	9.09

Note: *Percentage of all respondents (n=156) who referenced the element (e.g. process). Definitions usually comprised more than one element.

4.4 THE PERCEIVED VALUE OF CREATIVITY

4.4.1 Creativity for Academic and Employment Purposes, and for Life

To gain a sense of where or how educators valued creativity, participants were asked about the place of creativity as part of a student's academic skill set, as the basis for student employment, and as a general life skill. On a five-point Likert scale[16], with a 100% response rate to the question, 89.4% agreed or agreed completely that it was important for students to develop creativity as an academic skill, *and* as a general life skill (89.4%) (see Table 4.5). As one participant commented: "I think creativity is useful in whatever field of practice you're working in. In an academic context, being creative is an essential part of contributing to new knowledge," (#58, creative writing).

Comparison of the high means for these two questions confirmed the perceived importance of creativity in those contexts (m= 4.54, SD= .78, n= 170; and m= 4.48,

[16] The same Likert scale was used throughout the survey: 1= don't agree at all, through to 5= agree completely.

SD= .84, n=170). There was less consensus, however, on the importance of creativity for employment, as a lower number 67.6% agreed or agreed completely that it was important, (27.1% undecided, and 5.3% rated it as unimportant) (m= 3.98, SD= .99, n= 170). As one engineer commented: "Finding employment is not the be all and end all of a career. We train for life, not for the job," (#49) (see Table 4.5).

Table 4.5
The importance of developing students' creativity

Item*	n	Mean	SD
Q2a. I think it's important that students develop their creativity as part of their academic skill set.	170	4.54	.78
Q2b. I think it's important that students develop their creativity in order to find employment.	170	3.98	.99
Q2c. I think it's important that students develop their creativity as a general life skill.	170	4.48	.84

Note: *The range for all Likert scale questions in survey was 1= don't agree at all, to 5= agree completely.

The comments that accompanied the questions in Table 4.5 were classified into categories (see Appendix G9 for the full list of categories and examples). As an example, the categories related to the importance of creativity as an academic skill were as follows: (1) an essential capability, regardless of context; (2) required for learning in an unknown future; (3) a general good, supporting many areas of learning; (4) a valued capability, but with constraints; (5) ideal for the academic context, but not essential; and (6) problematic regarding parameters and the conceptual language used to express the attribute.

Overall the comments suggested that creativity as a life skill was clearly valued, but that determining the value of creativity was dependent on context in relation to academic and work environments. Some participants believed that creativity might give students a competitive advantage in the workplace, especially when combined with other desirable skills such as effective communication and time management skills, and the ability to work in teams. Others distinguished between creative skills and academic skills (#13), commented that the context of formal learning programs placed constraints on the emergence of creativity, and several commented that creativity may or may not be appreciated in the workplace, depending on the industry, the employer and expected norms (# 94, 103, 109 & 163).

As one nursing educator commented: “Creativity, or the not-expected, can be surprising or even distressing for people in vulnerable situations” (#89).

A theme that emerged here and throughout the survey was the importance of vocabulary best suited to constructions and expressions of creativity. For example, this strong emotional response from a drama educator decrying commodification of creativity exemplified the issue: “Creativity is not a specific ‘competency’ that can just be ‘included’ in a skill set” (#61). Similarly, a medical educator commented that he/she would be more comfortable talking about “flexibility in thinking” and the “ability to transfer between situations”, rather than creativity (#35).

4.4.2 The Value of Creativity within Organisational Contexts

Participants were asked to rate the value of creativity as perceived within three contexts: their department or centre, their university, and the students with whom they worked. On a five-point Likert scale perceptions that creativity was valued by participant’s *department* and their *students* were rated similarly: 59.6% and 62.0% respectively (agree/strongly agree) (18.7% and 14.8% disagreed/disagreed completely, 21.7% and 23.3% undecided/neutral, m=3.64, SD = 1.15, n=166; m=3.66, SD=1.04, n=163). Whether or not the *university* valued creativity, however, brought a more mixed result, as only 46.4% agreed or strongly agreed with the statement (m=3.37, SD=1.08, n=166). A relatively large proportion, 34.9%, was undecided about the university’s support in this matter (18.7% disagreed or disagreed; see Table 4.6).

Table 4.6
The value of the creativity as perceived by department, university and students

Item	n	Mean	SD
Q3a. I think that the development of creativity is valued by my department or centre.	166	3.64	1.15
Q3b. I think that the development of creativity is valued by my university.	166	3.37	1.08
Q3c. I think that the development of creativity is valued by the students I work with.	163	3.66	1.04

Comments relating to perceptions of the value of creativity within these contexts fell into three categories, namely: (1) creativity as a core value from a disciplinary viewpoint and/or as a concern for student learning; (2) the problematic place of creativity in the department, in the university and for students, characterised

by mixed messages and limitations in practice; and (3) problems of contested language around expressions of creativity, and relevance to the discipline. (Representative examples of comments coded for each category are provided in Appendix G, Table G10.)

Where creativity was conceived as a core value, respondents affirmed its place for students in their specific context, or agreed it was core for teaching. The bulk of comments, however, indicated that creativity was problematic. This somewhat edgy comment from a participant from visual arts sums up the complexity and political nature of the problem:

> Creativity has a history of being seen in universities as too vaporous and exotic to be taken seriously. Many in higher education dismiss creativity as defying definition. And as such, defying any attempt to foster creativity systematically through learning and teaching practices. Assessing creativity is apparently even more unimaginable for many lecturers. It is still widely held that creativity is only relevant to a small percentage of graduates as future professional workers. (#114, visual arts)

Given these tensions, it is not surprising that some participants perceived lack of alignment between organisational goals, priorities and expectations, and the structures and reward systems set in place to support creative practice (#79, 89, 114, 152, 156 & 159). These tensions were seen as a source of the mixed messages that both practitioners and students received (#9, 52, 72 & 152). The corporate environment of universities could also be considered counter-productive to creative outcomes: “Strategic planning, return on investment, etc. are all enemies of academic creativity” (#35, medical education), where performativity is valued over “developing something that challenges the organisations goals” (#73).

Other factors contributing to differences in valuing creativity in the three contexts included discipline, cohort, postgraduate or undergraduate status (#25, 75 & 140), non-alignment of student expectations of creativity carried through from school into higher education (#121), and the valuing of analytic methods over creative forms (#127 & 134) by both staff and students. In addition, it was noted that students were more strategic than ever, minimising effort for maximum return (#140 & 169), so would often choose not to value risk taking in relation to assessments and

creativity: a disturbing finding for disciplines that claim to focus on creativity (e.g. #58, creative writing).

The issue of contested language around creativity again surfaced here as an issue, as a selection of respondents pointed out that one's definition of creativity would colour response to questions on the value of creativity (#128 & 154), that creativity was not relevant to the discourse in their discipline (#86, health science), and that students might use terms other than creativity (e.g. "practical" rather than "creative" (#87, production)). Some reacted negatively to words such as "develop", skill" and "teach" preferring, for example, "push them to explore" rather than "promoting creativity" (#98 & 52).

4.5 DEVELOPING STUDENTS' CREATIVITY

In order to tease out practitioners perceptions about whether or not you can teach, design for or set up the conditions for creative outcomes, participants were asked to rate their agreement or disagreement with three sets of questions relating to:

1. Teaching, designing and setting up the conditions for creativity;
2. Their ability to develop students' creativity (efficacy); and
3. The professional environment in which they operated that either enabled or limited creativity.

4.5.1 Setting up the Conditions, Teaching and Designing for Creativity

The first set of questions in this group invited responses to three general statements (see Table 4.7) on the standard five-point Likert scale.

Table 4.7
Teaching, setting up conditions and designing for creativity

Item	n	Mean	SD
Q6a. I think creativity can be taught.	157	3.59	1.05
Q6b. I think you can set up the conditions for developing students' creativity.	158	4.57	.62
Q6c. I think you can design courses that lead to creative learning outcomes for students.	157	4.48	.71

Over three times as many respondents thought that creativity could be taught: 59.9%, agreed/agreed completely, compared with 17.2% who disagreed/ disagreed completely that it could not be taught (17.2% disagreed/ disagreed completely;

22.9% undecided/neutral; m = 3.59, SD = 1.05, n = 157). However, when the question was asked in terms of *setting up the conditions* for developing student creativity, an overwhelming 97.5% said yes, this was possible (agreed/ agreed completely), (1.3% undecided, 1.2% disagreed/ disagreed completely; m = 4.57, SD = .62, n = 158). Similarly, when asked if you could *design* courses that led to creative learning outcomes, 94.2% agreed/agreed completely that it was possible (3.2% undecided, 2.5% disagreed; m = 4.48, SD = .71, n = 157). Comparison of the standard deviations for these three questions (1.05, .62 and .71) indicated that the language used to express pedagogical activities and intentions related to creativity is open to wide interpretation and therefore needs to be chosen carefully.

Responses to the questions in Table 4.7 rely on conceptions of teaching, as some respondents rightly pointed out. Yet only eight participants qualified or added explanation about what teaching was or was not to them. In these comments, didactic instruction was ruled out (#109), but teaching as "nurturing" creativity (#104), or making learning possible so that students "let go of self-limiting habits" (#98) was allowed. One creative writing educator argued for the need to challenge students and give students the skills and tools to develop creative capacity (#58), which others affirmed (#14, #52). Achievement levels were expected to vary with individuals (#92), and intrinsic motivation was listed as an important contributing factor affecting outcomes (#133). In addition, regarding the complex relationship between assessment and creativity, one participant said in the context of defining creativity that creativity "cannot be measured, but it can be nurtured and enhanced" (#47). One educator from architecture explained their view that creativity cannot be "taught" as follows:

> I strongly believe that we cannot "teach" people to be creative, but we can help them to gain knowledge, experience, passion etc., to "deeply dig" inside their own world to push boundaries of stereotype and simple "problem solving" solution that does not have anything [to do] with creativity. [At the] same time we have to do the best to give them "tools" to become, through time, creative individuals. (architecture & interior design, #52)

(Further examples linked to disciplinary origins are provided in Appendix G, Table G11.)

Because disciplinary differences might be a possible influence on perceptions of creativity as a "teachable" concept, a Kruskal-Wallis test was used to compare responses by aggregated disciplinary grouping for the item "I think creativity can be taught". However, no significant differences were found between the three discipline groups–education (Gp1, n=49), arts (Gp2, n = 65) science (Gp3, n = 32), (χ2(2, n=146) = 1.13, p= .569, see Table 4.8). Unfortunately the sample size was insufficient for statistical tests on group difference between disciplines for the questions "Can you set up the conditions for creativity?" and "Can you design for creativity?".

Table 4.8
Kruskal-Wallis test for disciplinary difference regarding attitudes to teaching creativity

Item	n	Median
Group 1: Education	49	4.00
Group 2: Arts	65	4.00
Group 3: Science	32	4.00
Total	146	

Note: Question: "I think creativity can be taught."

4.5.2 Beliefs and Efficacy

Research in the UK regarding creativity in higher education (Fryer, 2006a) points to an observed disconnect between intended and actual outcomes, the difficulty of translating generic language and processes into "subject-specific contexts" (e.g. Jackson, 2006a, p. 5), and the importance of a supportive and "enabling ethos" within organisations to realise creative outcomes (Fryer, 2006a, p. 83). In order to gather evidence to refute or confirm this proposition, participants were asked if they thought they could set up the conditions for developing students' creativity, and if they knew how to do so. Similarly, they were asked if they thought they could *design for* creative outcomes, and if they had the knowledge and skills to implement such intentions (see Table 4.9). Comparison of the means and standard deviations in Table 4.9, showed that there was a probable gap between vision and practice (m = 4.57 and 4.48, SD = .62 and .71 for vision; compared with m = 3.66 and 3.69, SD = .91 and .97 for practice; n = 158 and 157 respectively.) So while a clear majority thought they could set up the conditions for developing students' creativity (97.5%, question 6b), or design for creative learning outcomes (94.2%, question 6c), only about two thirds (63.6% and 67.3% respectively) believed they

knew *how* to enact those beliefs, with 25.3% and 20.3% (respectively) undecided about their ability to do so in each case.

Table 4.9
Setting up the conditions and designing for creativity

Item	n	Mean	SD
Q6b. I think you can set up the conditions for developing students' creativity.	158	4.57	.62
Q7a. I know how to set up conditions for developing student creativity	154	3.66	.91
Q6c. I think you can design courses that lead to creative learning outcomes for students.	157	4.48	.71
Q7b. I know how to design for student creativity	153	3.69	.97

The results of a Friedman Test further highlighted this gap between creative vision and efficacy in practice. The test indicated a statistically significant difference regarding respondents' agreement with the statement, "I *think* you can set up the conditions for developing students' creativity" (Md = 5.0) and their uncertainty in response to the statement, "I know *how to* set up conditions for developing student creativity" (Md = 4.0), χ^2 (1, n=153) = 94.582, p < .001). A second Friedman Test similarly indicated that there was a statistically significant difference regarding respondents' agreement with the statement "I *think* you can design courses that lead to creative learning outcomes for students" (Md = 5.0) and lack of agreement with the statement, "I know *how to design* for student creativity" (Md = 4.0), χ^2 (1, n=151) = 73.960, p < .001) (see Table 4.10).

Table 4.10
Friedman test for repeated measure–variance between beliefs and practice

		Percentiles		
	n	25th	50th (Median)	75th
Q6b. I think you can set up the conditions for developing students' creativity.	153	4.00	5.00	5.00
Q7a. I know how to set up conditions for developing student creativity.	153	3.00	4.00	4.00
Q6c. I think you can design courses that lead to creative learning outcomes for students.	151	4.00	5.00	5.00
Q7b. I know how to design for student creativity.	151	3.00	4.00	4.00

Comments relating to the complexity of enacting creative vision realised a number of references to students' abilities and motivation, and how this affected outcomes, for example: "I think designing the course has more to do with knowledge of your students' cognitive history" (#80, physical education); and "depends on the

student . . . some have a very low base point" (#17, design & art); also "needs student motivation and agreement . . . you can lead a horse to water, but ???" (#91, instructional design); and finally, "knowing how and actually being successful in stimulating creative responses in each and every student in every group is never guaranteed" (#140, health services management).

4.5.3 Professional Conditions that Enable or Limit Creativity

In order to discover more about the contexts where creativity may be fostered, participants were asked if they could promote creativity in their educational context. 70.5% said that they could, but for those who were unable to do so, or found it inappropriate for their purposes, the main reasons were lack of support, unsuitable conditions or insufficient time to make change to the curriculum, and/or role definition (see Table 4.11).

Table 4.11
Barriers to promoting creativity

Options*	Response %
I do not have the support I need to make the changes I would like.	13.7
I do not have the conditions to implement the changes I would like.	12.3
I do not have enough time to change the curriculum.	10.3
It is not my role or responsibility to make changes to the curriculum.	8.9
The subject matter of my units or courses does not require students to be creative.	7.5
I do not have the technology to make the changes I would like.	6.8
I do not have sufficient skills to use the technology I need to promote student creativity.	4.1
Other	13.7
Not applicable–I can promote creativity in my context.	70.5

Note: *More than one option could be selected from the list provided. Categories were provided to participants. (n=146)

For those who *were* able to promote creativity in their educational context, participants were invited to respond to statements about their professional environment, whether it provided the conditions and environment *they* needed to be a creative educator, to support creative learning and teaching, and whether or not their *students* had the conditions and scope to demonstrate creativity. Responses were remarkably consistent across all three items (see Table 4.12), as comparison of means and standard deviation indicated (m = 3.84, 3.86 and 3.79; SD = 1.11, 1.07

and 1.09; n = 157). Only 65.0% agreed/agreed completely that conditions allowed them to be a creative educator (15.3% neutral, 12.1% disagreed/ disagreed completely, 7.6% n/a). 68.8% agreed/agreed completely that they had the professional conditions to support creative learning and teaching (15.3% neutral, 12.8% disagreed/ disagreed completely, 3.2% n/a); and 59.9% agreed/agreed completely that students in their units or courses had the conditions and scope to demonstrate creativity (15.9% neutral, 10.9% disagreed/ disagreed completely, 13.4% n/a).

Table 4.12
Professional context and conditions for fostering creativity

Item	n	Mean	SD
Q8a. In my professional environment, I have the conditions and the scope to be a creative educator.	157	3.84	1.11
Q8b. In my professional environment, I have the conditions and the scope to support creative learning and teaching.	157	3.86	1.07
Q8c. Students in my units or courses have the conditions and scope to demonstrate their creativity.	157	3.79	1.09

Rather than citing enablers, respondents' comments on these questions tended to point to the same barriers to promoting creativity identified by participants who were *unable* to enact their creative vision at the time of the survey (identified in Table 4.11). The five categories that emerged from the data regarding barriers or enablers around conditions and scope were: (1) the impact of resource constraints (e.g. budgetary limitations, heavy workloads that militated against curriculum redevelopment and evaluation of new technologies, difficulties caused by large class sizes, and inappropriate or inadequate classroom space); (2) the impact of organisational culture and structures (e.g. the requirement to be accountable for accreditation standards, and attend to numerous competing higher education agendas) that result in compromises to creativity; (3) prevailing pedagogical culture that resists change; (4) the negative effect of assessment practice on students' creative development and the problematic issue of determining suitable assessment criteria; and (5) pedagogical contexts where creativity was not perceived to be a requirement (e.g. where foundational factual knowledge is the key concern).

The following comment exemplifies the issues inherent in category 2, organisational pressures that impact the professional environment and creative development:

> I would like to enable students to be creative. However, at the moment the curriculum seems to bear many heavy burdens: graduate capabilities, academic integrity, learning-teaching-research nexus, being inclusive, English-language proficiency, first year transition, work-integrated learning, academic literacy and numeracy (#156, educational development).

Further, as an example of category 3, prevailing pedagogical culture, the following response points to issues within the technology-enhanced learning environment that impact professional conditions and scope for creativity:

> The underpinning thinking stunts creative thinking or practice. [It is the] wrong way to go about developing online units . . . We will have textbooks online with a few video and discussions boards–hardly creative or new. The mode has changed–thinking stays the same. (#152, learning & teaching)

(Additional examples of comments, coded to category and discipline are provided in Appendix G, Table G12.)

4.6 CREATIVE THINKING, CRITICAL THINKING AND PROBLEM SOLVING

In order to better understand how to design for creativity in practice, it is important to know what educators are designing for. Therefore I asked participants about their use of three key terms: creative thinking, critical thinking and problem solving. The rationale for asking these questions was the known complexity surrounding the concept of creativity, the issues that disciplines have assessing it (e.g. Ball, 2010; Jackson, 2005; Penaluna & Penaluna, 2009), and evidence from a variety of university websites listing graduate attributes demonstrating that these modes of thinking may be conflated in practice (see Appendix A for examples collected during this inquiry, and McWilliam & Dawson, 2007.)

Participants were asked to rate their agreement on two questions relating to whether or not they differentiated between these three modes of thinking (see Table 4.13). Definitions for the terms were not provided.

Table 4.13

Problem solving and critical thinking

Item	n	Mean	SD
Q6d. In the process of encouraging student learning, I don't necessarily distinguish creative thinking from problem solving.	154	3.36	1.23
Q6e. In the process of encouraging student learning, I don't necessarily distinguish creative thinking from critical thinking.	157	3.06	1.30

The data indicates that respondents saw somewhat less of a distinction between *problem solving* and creative thinking (mean 3.36, SD 1.23, n=154), compared with *critical thinking* and creative thinking (m = 3.06, SD = 1.30, n = 157). 49.0% of respondents agreed/agreed completely that they didn't distinguish *problem solving* from creative thinking (23.2% undecided, 27.7% disagreed/strongly disagreed), while 38.8% said they did not distinguish *critical thinking* from creative thinking in the process of encouraging student learning (23.6% undecided, and 37.5 disagreed or disagreed completely). Opinion clearly diverged widely about how these cognitive and affective activities and abilities were treated in the context of student learning.

I employed a Kruskal-Wallis test to compare responses by disciplinary grouping to the questions of whether or not educators distinguished between *critical thinking* and creative thinking, or between *problem solving* and creative thinking (Table 4.14); however, no significant difference was found between the disciplines. See Table 4.14 for creative thinking and problem solving: (χ^2(2, n=145) =1.70, p= .428), and Table 4.15 for critical thinking and creative thinking, (χ^2(2, n=147) =2.26, p= .324.

Table 4.14

Discipline groups–distinguishing between creative thinking and problem solving

Item: In the process of encouraging student learning, I don't necessarily distinguish creative thinking from problem solving. (Q6d)	n	Median
Group 1: Education	47	3.00
Group 2: Arts	64	4.00
Group 3: Science	34	3.00
Total	145	

Table 4.15

Discipline groups–distinguishing between creative thinking and critical thinking

Item: In the process of encouraging student learning, I don't necessarily distinguish creative thinking from critical thinking. (Q6e)	n	Median
Group 1: Education	48	3.00
Group 2: Arts	65	3.00
Group 3: Science	34	2.50
Total	147	

Comments relating to the issue of differentiating between modes of thinking were initially coded into 13 different categories (see Appendix G, Table G13), and then aggregated into two major categories: perceptions of connections or complementarity between the modes of thinking, and perceptions of clear differences between modes (see Table 4.16).

Table 4.16

Examples of perceived connections and differences between creative thinking, critical thinking and problem solving

Category	Comment	Discipline
Connected and/or complementary	"Very good questions...I'd say that creativity is a key component in BOTH problem solving AND critical thinking."	faculty of arts, #8
	"Working in intercultural settings creatively, problem solving and critical thinking all require creative intercultural thinking!!!"	learning & teaching, #152
Different	"Hmm, I don't like to mix creativity with critical thinking or problem solving. The difference is 'verve', 'panache', 'hutzpah', 'balls'."	linguistics, #116
	"Critical thinking is a reductive style of thing, whereas creative thinking is an expansionist style. Both are valid."	engineering, #120

The following comment exemplifies the complexity inherent in these distinctions:

> Critical thinking is linked to creative thinking, but requires a specific kind of logic. Creative thinking allows for embodied and emotional reactions, where critical thinking requires a more analytical, objective approach. That said, I think all three skills are linked; certainly creative thinking is useful in both problem solving and critical thinking, but is a restrained version. Critical

> thinking also stimulates creativity; being analytical leads logically to seek new solutions to issues revealed through analysis. (#58, creative writing)

Further, this quote encapsulated the boundary crossing evident in grappling with these concepts:

> Creativity, problem solving and critical thinking are complementary skills that overlap. They are not identical and arguably relate to a deeper approach to learning style. A more conservative approach to problem solving, something that is risk averse, is less likely to involve creativity than a belief that the current situation/understanding needs to change. (#140, health services management)

One educational developer (#156) also pointed to the tendency for creativity to often remain tacit in the academic environment when they remarked on the need to adopt the most appropriate language to align with the "approved" discourse of the discipline, and use terms such as critical thinking and problem solving, rather than creativity, as a means of connecting with colleagues. In addition, as a reminder of the reciprocal relationship between the researcher and research participants, the survey questions in this section prompted reflection for one respondent who remarked: "I may put more stress on the difference between creativity and problem solving and results evaluation next time" (#151, engineering and IT).

4.7 EXAMPLES OF CREATIVE STRATEGIES AND ACTIVITIES

130 participants provided responses to an open-ended question inviting examples of how they promoted student creativity in practice. Responses included teaching strategies and practical activities. The examples of teaching strategies were classified into nine categories and included the following: modelling and demonstrating creativity; use of authentic tasks; open-ended problems; allowance for multiple perspectives, formats and technologies; collaborative work and acknowledgment of the importance of individual work; building foundational knowledge, techniques and skills; negotiated and project-based assessments, as well as student devised and multidisciplinary assessments (see Appendix G, Table G14 for examples of each category and the disciplines from which they were derived).

Generally the examples of creative activities provided by participants could be framed as open-ended tasks supporting creative outcomes. The degree of creativity

possible, however, regarding either the strategies or activities would be dependent on alignment with learning and teaching strategies and facilitation methods, amongst other things. However, as a means of evaluating the *activities* for their likely contribution to fostering creativity, each was mapped against the criteria for assessing creative thinking skills set out in the Creative Thinking Standards (CTS) rubric, reproduced in Appendix H. While the rubric provided standards by which creative *thinking* could be judged, it nonetheless provided a useful set of evaluative criteria. Table 4.17 provides three examples of creative activities from the data and demonstrates that examples were likely to meet at least four of the creative thinking criteria (see Appendix G, Table G16 for the expanded list). The CTS criteria were:

1. Acquiring competencies–strategies and skills within a particular domain;
2. Taking risks–e.g. personal risk, risk of failure, going beyond original parameters of assignment, tackling controversial topics;
3. Solving problems;
4. Embracing contradictions;
5. Innovative thinking–novelty or uniqueness of idea, claim, question, form, etc.;
6. Connecting, synthesising, and transforming.

Table 4.17
Examples of creative activities

Activity	Example	Likely CTS criteria met
Awareness of audience and format	Transform content created for one audience into content for another: students take an original research essay written for an eclectic audience, and rewrite it as a blog post for a more general audience. (media & communications, #24)	1, 3, 5, 6
Use multimedia & ICTs	Students create a video to demonstrate a clinical skill (nursing, #31), use multimedia to think differently about a topic (#55, dance), utilise Web 2.0 affordances (engineering), develop posters (journalism, media & communication, #90), build 3D models to represent research outcomes (education, #168; biology, #122)	1, 2, 3, 5, 6
Relate task to social problem	Students relate a task to real-world problems (performance studies, #54)	1 - 6

4.8 THE TECHNOLOGY-ENHANCED LEARNING (TEL) CONTEXT

4.8.1 Context and Delivery Mode

To gain a sense of the impact of the complex, technology-rich learning environments in which participants' potentially foster creativity, it was important to determine their familiarity with ICTs and delivery mode. Participants were asked if they taught, supported, managed, researched, or designed courses for students in any of three modes of delivery typically found in Australian universities: that is, on-campus (face-to-face), distance and online, and blended mode. At the time of the survey, MOOCs (Massive Open Online Courses) had only begun to emerge as a new feature of higher education (Gallagher & Garrett, 2013), and so a specific question was not asked about familiarity with this new form of course delivery. However MOOCs fall into the category of online learning and so were therefore covered by the survey questions.

The majority of respondents, 78.5%, were familiar with or participated in on-campus delivery; however less than two-thirds were familiar with blended learning, 59.7%, and only 39.6% with distance and online learning (see Table 4.18). Demographic data indicated that respondents would be expected to have a certain level of comfort with the use of Internet technologies, as the average number of years spent designing or teaching with such technologies was 9 years (see Table 4.2 above).

Table 4.18
Experience with course delivery modes

Response*	n	Delivery mode (%)
On-campus	117	78.5
Blended learning	89	59.7
Distance and/or online	59	39.6

*Note: * More than one delivery mode could be selected.*

In answer to the question about *where* it is easier to foster students' creativity (which assumed that it was possible), the data showed strong support for the face-to-face learning context (64.1% agreed/agreed completely), followed by blended learning contexts (49.7%). The more problematic online learning context (26.5%), and the specific environment of the learning management system (LMS, e.g. Blackboard or Moodle) were rated well down the scale (26.7%) (see Table 4.19).

Table 4.19

Delivery context measures of central tendency

Item	n	Mean	SD
Q10a. I think it is easy to foster students' creativity in the context of face-to-face learning.	156	3.70	1.04
Q10c. I think it is easy to foster students' creativity in the context of blended learning (online mixed with face-to-face).	153	3.37	1.02
Q10b. I think it is easy to foster students' creativity in the context of online learning.	155	2.84	1.02
Q10d. I think it is easy to foster students' creativity with the support of a learning management system (e.g. Blackboard, Moodle).	150	2.78	1.09

Responses ranged widely over the Likert scale (SDs = 1.04, 1.02, 1.02 and 1.09) and means for the LMS option and online learning were lower than those for blended learning or the face-to-face environments (LMS m = 2.78, online learning m = 2.84, blended learning m = 3.37, face-to-face m = 3.70). This indicated that once complex learning technologies were brought into the educational context, the ease of fostering creativity was definitely perceived to deteriorate (see Appendix G, Table G15 for further comparison).

Comments relating to fostering creativity in the different delivery modes, and technology in general, clustered around the following: the complexity of fostering creativity, whatever the context; the need to keep the focus on pedagogy and the learning environment, rather than on the technology when fostering creativity; the efficacy of Learning Management Systems (LMSs); professional skills, including ability, currency and organisational support; and clarification of terminology. For example, some participants separated the *mode* of delivery from the *activities* of fostering creativity, saying that the mode of delivery was either irrelevant or independent of creative development. Some acknowledged the affordances of new digital technologies, for example for helping to explain difficult concepts ("fabulous images and animations", #86), and others noted that inspiring "isolated" students (distance education students) was not easy at any time, but that "the key variable is the skill of the teacher; some teachers are skilled f2f teachers, others skilled online teachers, and some special people can teach in any mode" (#133, business).

Interestingly, reflection on the relationship between the use of a Learning Management System (LMS) and the possibility of fostering creativity brought some respondents' emotion to the surface. One system was described as "complete

clunkiness", "a dog", "a bureaucratic monster", "restrictive", " completely insufficient for the job", and "there are better web tools for creativity" (#52, 59, 64, 92 & 126). However, more measured perceptions included: "Blackboard helps, but the fostering of creativity depends on the initiative and creativity (!) of the teaching staff" (#163), and "creativity can be stimulated in an LMS, however the default is often to have students as passive and/or reactive participants in their learning" (#83).

4.8.2 Gender and Technology

A Mann-Whitney U test revealed a significant difference between males and females regarding the question of participant confidence that, with the support of a learning management system, students' creativity can be fostered: females (*Md* = 3.0, n = 85) and males (*Md* = 2.0, n = 60), *U* = 1828.00, *z* = -3.012, *p* = 0.003, *r* = -0.25). Females were more confident. This is a small effect size, however, based on Cohen's (Mulnix, 2012, pp. 477-478) criteria (see Table 4.21 below). Why females were more confident using an LMS for this purpose is not clear from the data.

Table 4.21
Mann-Whitney U test for gender and confidence using an LMS to foster creativity

Gender	n	Median
Female	85	3.00
Male	60	2.00
Total	145	3.00

4.8.3 Efficacy, Capacity and Technology

For those able or wishing to promote student creativity, responses indicated that only slightly more than half of the participants agreed that they had either the technology (57.9%, agreed/agreed completely: m = 3.60, SD = 1.0, n =151) or the skills (58.5%; m = 3.60, S = 1.07, n = 152) to promote student creativity. Importantly, around a quarter were undecided on these two issues (28.3% and 25.0% respectively). 13.8% and 16.5% disagreed/disagreed completely that they were equipped in this area.

From this it might be concluded that nearly half of the respondents felt insufficiently prepared or ill equipped to promote student creativity with available technologies or technologies of their choice. Technologies might include ICTs, services for course delivery, and/or other specialist technologies (see Table 4.22).

Table 4.22
Technology conditions and ability to promote student creativity

Item	n	Mean	SD
Q7c. I have the technology to promote student creativity.	151	3.60	1.00
Q7d. I have the skills to use the technology to promote student creativity.	152	3.60	1.07

On the question of professional skills and technologies, opinions ranged from positive affirmations such as, "I stumble along...! (#90), to "very little assistance provided for technological skill enhancement"(#72, dance). Despite a perceived lack of organisational support, some remained optimistic about their level of efficacy, as one educator from media and communications said, their technology skills were "sufficient", but that they lacked time to develop and keep them current, and "my university imposes pretty poor conditions for uses of technology, but I work around them, um, creatively" (#24).

4.9 OTHER CONTEXTUAL ISSUES: CLASS SIZE, PEER NETWORKS AND MENTORS

4.9.1 Class Size

Participants were asked to respond to two final statements relating to the context in which creativity might be fostered. The statements related to class size and the role of networks of peers and mentors as factors impacting the development of student creativity. Firstly, regarding class size, the data indicated that small class size was not universally regarded as either a positive or negative factor impacting students' or teachers' creativity. As the lower mean in Table 4.23 indicates (m = 2.76, n=155), 41.5% of participants disagreed/disagreed completely that creativity could be encouraged and supported *only* where class sizes were kept small. The standard deviation (SD = 1.20) indicated the spread of responses across the scale, with only 29.4% considering that class size was a major factor (see Table 4.23).

Table 4.23
Class size and creativity

Item	n	Mean	SD	Disagree/disagree completely	Neutral/ undecided	Agree/agree completely
Q11a. I think creativity can be encouraged and supported only where class sizes are kept small.	155	2.76	1.20	41.5%	20.0%	29.4%

Clearly perceptions about the importance of class size and fostering creativity varied considerably. (The categories into which comments on this question were classified are provided in Appendix G, Table G17.) This positive comment from an educator who taught by distance education indicated the possibilities for creative development in an institution that paid attention to staff develop and culture:

> The matter of class size depends entirely on what students are doing. When our staff prepare workshops for our distance learners the class size is theoretically unlimited. On the other hand we have plenty of one-to-one engagement with students. The idea of "class size" is largely redundant. In regard to (b) we ensure that every member of our staff (about 85) is at least highly empathetic to creativity. All of them experience creative processes in "staff development days" (four times per year) and the majority have their own creative practice. Our accounts, maintenance and reception staff are just as steeped in creativity as our tutors. (#40, art and creativity)

The view and experience of a health science educator, however, indicated a contrasting view that large classes were problematic and that there was a gap between intended outcomes and actual practice:

> Even though we have large first year classes (630+) we try to ensure that the workshops classes are limited to 20 students so that we can engage in creative and collaborative learning. I find it much more difficult to design and coordinate highly creative learning tasks when you have very large classes. My previous experience in small group problem-based learning courses was probably my most highly creative teaching experience, and these students certainly responded very positively to this learning environment–their feedback frequently spoke about their ability to creatively think about and apply their learning to new contexts. (#86, health science)

4.9.2 Peer Networks and the Value of Mentoring

The literature suggests that networking is important to contemporary learning (Bridgstock et al., 2011; Siemens, 2005). If one accepts that creativity is an integral component of learning, then it would seem that the ability to develop and navigate personal networks is an important capability that contributes to students' creativity. With this view in mind, I asked participants how they valued networks of peers and mentors (see Table 4.24). On the role they play in the development of student creativity, 73.5% of participants agreed/agreed completely in their importance (m = 4.08, SD = .92, n =155). Opinions on this were not as diverse as those regarding class size (see Table 4.24).

Table 4.24
Networks of peers and mentors

Item	n	Mean	SD	Disagree/ disagree completely	Neutral/ undecided	Agree/ agree completely
Q11b. I think networks of peers and mentors play an important role in the development of student creativity.	155	4.08	.92	5.9%	11.8%	73.5%

While there were few comments on this question one educator affirmed the value of networking, large classes and the effective choice of technology for creative purposes as follows: "I have used social networking tools with media library in cohorts of 700 and seen incredible great creativity. Creativity needs to be embedded (constructive alignment) in curriculum to work!!!" (#134, education/marketing). In addition, another respondent pointed to the value of seeking inspiration, mentoring and support from sources close to home (i.e. within the classroom):

> I do think that we often underplay the tremendous resources available to a class in the form of students . . . I have benefited from the advice and input of students and adapted my teaching in light of their contributions and feedback. (#156, educational development)

4.10 SUMMARY: SO WHAT *IS* IN A NAME?

Complexity, context and multiple perspectives: that is what is in the name "creativity". The survey data provided perspectives from an experienced sample of educators who teach, support, manage, lead and/or research in higher education, 71% of whom claimed to be in a position to promote creativity in their own professional context. The survey confirmed that creativity is a complex concept, constructed by individuals combining common elements of creativity in unique ways, and influenced by disciplinary language preferences. Creativity was affirmed as an important academic and life skill by 89% of participants, with less agreement about its place as an employment capability (68%). While a majority of participants (60%) believed that creativity could be "taught", the notion of "teaching" was contested. However agreement was much stronger for the propositions that one could "set up the conditions" for developing creativity (98%), or design for it in curricula (94%). In designing curricula, participants were less likely to distinguish problem solving from creative thinking (49%), than critical thinking from creative thinking (39%), and there was little agreement as to whether or not these modes of thinking were all related, overlapping, or entirely different. No disciplinary differences emerged as statistically significant in relation to notions of "teaching" for creativity or distinguishing between modes of thinking. Further, while most participants (98%) thought they could set up the conditions for developing students' creativity, or design for creative learning outcomes (94%), only about two thirds believed they knew how to enact that vision (64% and 67% respectively).

Given the technology-enhanced learning environment in which most practitioners operate, a major finding was that a low majority thought they had the technology (58%) or the skills (59%) to carry out their plans for encouraging creative learning outcomes. This suggests that many staff may be ill-equipped or under resourced for this key pedagogical activity. In addition, while a majority perceived that fostering creativity in online environments was more difficult than in either face-to-face or blended learning environments, some participants thought that the technology had less to do with creative efficacy than the initiative and creativity of the teacher, and/or their ability to facilitate creativity–whatever the delivery context. Class size was perceived to be either a positive or a negative factor shaping creative development, depending on the impact of contextual factors. Networks of peers and

mentors, however, were viewed less ambiguously, and considered by a majority to have an important role in the development of student creativity.

Two gender differences emerged from the data: females were more confident than males that they could set up the conditions for creative student outcomes than males, and females were more confident that they could develop students' creativity using the affordances of a learning management system (LMS). The reason for these gender differences regarding confidence is not apparent from the data.

Analysis and discussion of the survey results in relation to the literature follow in the next chapter.

Chapter 5 A Re-Creating Activity: Survey Analysis and Discussion

> An individual's preparation for learning . . . is before anything else, a critical, creative, re-creating activity.
>
> –Freire (2005, p. 33)

5.1 PURPOSE AND STRUCTURE

In this chapter survey results are discussed in relation to the literature: it is a critical and creative "re-creating" (Freire, 2005) of the findings. The three research questions (RQs 1-3) are used to frame the discussion. This includes synthesis of the findings around the meaning of "being creative", its perceived value, variation in disciplinary conceptions and expression, and reflections on the problematic threesome: critical thinking, creative thinking and problem solving (section 5.2). The second research question is addressed in section 5.3 where the focus turns to pedagogical design issues, in particular how conceptions of teaching may influence views on whether or not creativity can be taught. The thorny issue of assessment is brought into focus, and its impact on practitioners' efforts to implement a creative vision. The importance of creative self-efficacy and organisational support are discussed along with strategies for encouraging and supporting creativity within organisations. The third research question around the role and impact of TEL environments is synthesised in section 5.4 where the mixed response from participants about the potential of ICTs to support creative learning is unpacked. The chapter concludes with a summary of the main concerns and findings from the survey.

5.2 WHAT DOES "BEING CREATIVE" MEAN?

Section 5.2 addresses RQ1: What do educators understand by "being creative" in the context of learning and teaching in higher education?

5.2.1 Expressions of Creativity

Examination of the 156 survey definitions of creativity confirmed that any attempt to synthesise a single common definition was problematic. The same conclusion was drawn by Swirski et al (2008) in previous higher education research

into creativity. In addition, the literature confirms that multiple conceptions of creativity are to be expected (e.g. Bleakley, 2004; Csikszentmihalyi, 1997; Sternberg, 2005). However, the "fuzziness'' of the concept should not been seen as a deterrent to research, as Fryer (2012) argues:

> The multidimensional nature of this fuzzy concept [creativity] may make it appear an unwieldy concept to measure, but in this regard it is no more unwieldy than other similar concepts such as work, play, love, or education . . . arguably all polythetic or fuzzy concepts like creativity present challenges for researchers. (p. 21)

I expected disciplinary differences regarding conceptions of creativity, because as Jones (2009) confirms, each discipline values and frames generic capabilities differently. Disciplinary culture affects how these attributes are conceptualised and integrated within the curriculum through a social process of meaning making: creativity is no different in this respect (Fryer, 2006a), and the survey provided evidence for this (refer Table 4.4). Those from the sciences (science, mathematics, engineering, IT, health and medicine) tended to see creativity as a process and product orientated phenomenon concerned with problem solving, adapting or building on the work of others, and having value. Educators from the arts were less concerned with problem solving than their science colleagues, but referenced aesthetic and dispositional qualities more frequently. Participants from education were more likely to refer to problem solving than their arts colleagues, but less often than participants from the sciences. So, while trends were evident, uniformity within discipline groups was not observed. In common, however, all disciplines tended to conceive of creativity as an active process: making, playing, experimenting, connecting etc. (see Table 4.3); and participants from education and the arts were even more likely to reference process than their science colleagues.

Respondents who preferred terms such as "flexibility" (medicine) or "practicality" (drama), rather than "creativity" reinforced both the disciplinary orientation of language used to construct concepts of creativity, and the need to employ vocabulary that meets personal and contextual goals. In some cases this rephrasing may have been a strategy to minimise the emotional component of creativity and highlight analytical ways of thinking, knowing and being, which are possibly easier to quantify than supposedly "unwieldy" and "fuzzy" (Fryer, 2012, p.

21) concepts like creativity. Another interpretation is that creativity has become such a loaded word, so full of expectation, that its value in certain contexts is diminished and other constructs prove more powerful and effective. This distancing from the word "creativity" was captured by one respondent, who commented that "creativity is not a term that is used in our area of work when describing our teaching; it is perhaps used when describing high-end research, but it is not part of our major discourse in health" (#86). Difficulty with the word "creative", and the phrase "being creative" was echoed in the case study findings where it was apparent that the use of the phrase "be creative" could be counterproductive.

Interestingly, the elements least referenced in descriptions and definitions of creativity were dispositional ones. This may suggest that respondents were more likely to conceive of creativity as a second generation capability, a general human capacity that can either be learnt or cultivated, rather than an innate, first generation quality confined to exceptional individuals (see Craft, 2006a; Jackson & Sinclair, 2006; McWilliam & Dawson, 2008; Robinson, 2011). Comparison with earlier creativity studies (Fryer, 2006a; McWilliam & Dawson, 2007) revealed similar elements in educators' descriptions of creativity; however, while "ways of thinking" or equivalent, was high on the list for all three studies, "products" rated as less important in the earlier studies, and the category "mysterious processes" listed in the 2005 and 2007 studies did not appear in this research. Possible reasons for this may be the different backgrounds of participants in each sample, a shift in the notion of creativity over time as it has become recognised as a more general (second generation) capability, or variation in data coding methods.

5.2.2 Differentiating Creative Thinking from other Cognitive Processes

The mixed responses from educators regarding whether or not they saw a relationship between creative thinking (as one dimension of creativity), critical thinking and problem solving, provided further evidence about the difficulties of embedding generic attributes in practice. As Oliver (2011) points out, these capabilities are often conflated, or mixed in with notions of communication. Problematic as it may seem, unhooking creative thinking from other cognitive processes may provide clarity about what educators are designing for in practice and what and how they are assessing these factors.

The data showed that creative thinking was less likely to be distinguished from problem solving in the process of encouraging student learning; critical thinking on the other hand was more likely to be distinguished from creative thinking. Why was this? Problem solving might be seen as a messier and more iterative process than critical thinking, as it can be explained as involving both analysis and insight (Weisberg, 2013), and therefore seen to be more akin to creative thinking. Critical thinking, however, if characterised as convergent and linear is less like creative thinking. The literature, however, indicates that this is contested ground (Australian Learning and Teaching Council, 2010). Some researchers report that all three modes of thinking are required for creativity (e.g. Runco & Chand, 1995). Others argue that critical thinking is part of creative thinking processes as both generative and analytic thinking are required for creativity (e.g. Fryer, 2012). Mulnix (2012) argues that critical and creative thinking are definitely not the same. And while the Facione report into critical thinking (Facione, 1990) argues that critical thinking is about making judgements and being able to justify those judgements, evidence from the case studies (chapters 6 and 7) indicates that practitioners encourage the development of this type of judgement making as part of the process of creativity. Disputes around these issues continue in practice and in the literature.

Interestingly, in Bloom's revised taxonomy of cognitive processes "creating" is separated from "analysing" and "evaluating" (Anderson & Krathwohl, 2001). Creating is described as "putting elements together to form a novel, coherent whole or make an original product" (Krathwohl, 2002, p. 215) and is regarded as the most complex of cognitive processes, and therefore placed at the top of the hierarchy. Creating is classified by terms such as generating, planning and producing, and is rated higher than either analysing or evaluating. Analysing is characterised as "breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose", and includes differentiating, organising and attributing (Krathwohl, 2002, p. 215). Evaluating is defined as "making judgments based on criteria and standards", and includes checking and critiquing. I would argue that all these extended abstract, higher order processes are required for creativity, in a process of iterative cycles of analysis, creation and evaluation, including phases of critical and creative thinking and problem solving. The discussion above indicates the complexity and messiness in coming to

understand the creative process and it is clear that the topic around related cognitive processes would benefit from further research.

5.2.3 The Value of Creativity in Context

The survey provided some clues as to higher education practitioners' motivations for being creative and fostering student creativity. Motivations may reside in the value educators place on their own creativity as teachers, the value they believe their department and institution ascribe to creativity, and the value they and students assign to creative activities. The findings demonstrated that at all levels of the organisation, and in student learning, "being creative" and the value of creativity was typically characterised by complexity, mixed messages and conflicts of interest.

Importantly, creativity was strongly affirmed as a core value in student learning (89%); there was never a sense from survey participants that creativity was irrelevant or undesirable. However, creativity may be considered inappropriate by the *discipline* for subjects concerned with developing foundational factual knowledge, or where compliance is valued over creativity (e.g. some areas of health science). This more limited view of creativity is worth challenging, however, if learning and teaching are viewed as creative activities (e.g. see Freire, 2000). Similarly, where participants noted that creativity was only relevant in their discipline for postgraduate courses or in the research context, educators may be missing opportunities to prepare students more holistically for futures beyond the university. As Barnett (2012) argues, we need to prepare students for an uncertain future, where the ability to deal with change flexibly and creatively is key; undergraduates and postgraduates alike need to build their creative capabilities. However, if creativity is perceived as "vaporous" or " irrelevant" and not to be taken seriously compared with more analytic approaches, then its place in curricula, the academy, and the discourse will remain tentative.

Examination of attitudes around the value of creativity for its comparative importance in students' academic, personal, and employment lives raised further issues of complexity. In recent decades universities have responded to government initiatives and global imperatives (Araya & Peters, 2010), and feedback from employers (Australian Learning and Teaching Council, 2010) that there is a need for graduates to be better prepared for the workforce (Hearn & Bridgstock, 2010).

Employers also articulate a need for *creative* graduates (Australian Learning and Teaching Council, 2010). That participants valued creativity less for students' employment purposes (68%), than for its place in their academic lives and their lives in general (89%), might indicate that these messages are not getting through. Alternatively, it may suggest that educators are aware that universities not only prepare students for the workforce, but that they prepare students for life (as one engineering participant pointed out). Other researchers confirm the value of creativity as a quality that contributes to *being* in the world (e.g. Barnett, 2012; Craft, 2006b; Freire, 2005; Rooney, 2010). In addition, Barnett argues that *learning* could now and for the future be better understood in terms of "human qualities and dispositions" rather than merely "in terms of knowledge or skills" (Barnett, 2012, p. 65). Therefore, in the drive to prepare students for employment, to pass on disciplinary knowledge and skills, important as those imperatives are, it is also important to reflect on how educators prepare students for life; that is, a creative life of learning.

While the data indicated that creativity was valued for its core role in some disciplines (e.g. creative industries), adoption or implementation more broadly appeared to be somewhat haphazard, dependent on teachers' motivations, institutional context and resourcing: there was evidence of a gap between institutional vision and academic practice, *and* teachers' own creative vision and actual practice. As Jones (2009) argues, this is not uncommon where generic attributes (such as creativity) are concerned; there can be a gap between "what is valued and what is actually taught" (p. 175). This is a result of "variation in interpretation of generic attributes, the difficulties of reducing complex attributes to definable learning outcomes and practical constraints on teaching caused by factors such as large classes" (p. 175).

Although creativity was reported to be moderately well valued by departments (60%) and students (62%), it was perceived to be valued less by the university (46%). Some participants presented a scenario where they were being asked to be creative, in line with university vision statements and policy documents, but where resource limitations and competing agendas interfered with their ability to transform rhetoric into reality. Competing institutional demands included improving students' academic writing and mathematical skills, addressing concerns around academic

integrity, and planning for work integrated learning: all of which are compelling agendas. The issue of compliance and competing agendas is recognised as yet another problem common to settings where the aim is to embed graduate capabilities (Barrie, 2007; The National Graduate Attributes Project, 2009). As one participant noted, for creative vision to be enacted, it is not enough for the university or department to have expectations "that students will just simply 'be creative'" (#52, architecture & interior design): systemic support is required. This is particularly so for courses where creativity is not a core value; but even in those courses where creative outcomes *would* normally be expected (e.g. in the creative industries). It is significant that educators from creative writing and architecture voiced concerns over these issues. Nonetheless, despite evidence of difficulties and a darker side to the development of creativity in practice, some academics still reportedly made headway as they "stumbled along" (#90), or "worked around" blockages, "um, creatively" (#24).

5.3 DESIGN AND CULTIVATING CONDITIONS FOR CREATIVITY

Section 5.3 addresses RQ2: What lessons can be learnt about fostering and designing for creativity in higher education from educators in the sector? (pedagogical approaches, barriers and enablers)

Three key issues emerged from the data impacting the success with which creativity may or may not be designed for in curricula. They were:

1. pedagogical approaches: conceptions of teaching and fostering creativity, differentiating creativity from other cognitive processes, and assessment (see section 5.3);
2. self-efficacy: beliefs about one's ability to design or set up the conditions for creative learning and teaching (see section 5.3); and
3. professional and contextual issues, including the use and integration of various technologies (see sections 5.3 and 5.4).

All the above issues could be framed either as barriers, enablers, or both. For comparison, it is worth noting that previous studies (Fryer, 2006a; McWilliam & Dawson, 200) reported similar perceptions about barriers to creativity. In the earlier research constraints imposed due to colleagues' requirements, inadequate preparation time, unsuitable accommodation, overly large classes, insufficient class contact time,

inadequate resources, and excessive "non-teaching load" (Fryer, 2006a), were identified as barriers. As the following discussion indicates, perceptions regarding limiting factors still cluster around similar issues.

5.3.1 Pedagogical Approaches: Conceptions of Teaching

The importance of finding a vocabulary that resonates with practitioners to further the discourse around creativity was illustrated not only in the multiple definitions of creativity offered, but also by the marked difference in responses to the question of whether or not you can teach creativity, versus propositions that one could *set up the conditions for* or *design for* creativity. Even though 60% agreed that creativity could be taught, the percentage was well below the percentage who thought one could design for or set up the conditions for creative student outcomes (94% and 98% respectively). Possibly for some practitioners, the word "teaching" was narrowly conceived of as didactic practice only (direct instruction, transmissive pedagogies), but *designing for* and *setting up the conditions* for creativity may not have been viewed as "teaching" activities, but rather as coaching and facilitating processes (which I argue are constitutive elements of teaching).

Perhaps the problem here is less a problem with creativity, and more of a problem with conceptions of teaching. Following Ramsden's (2003, p. 7) definition of teaching, teaching may have been conceived in one of three ways: (1) as purely didactic instruction, (2) as *all* learning and teaching activities, or (3) as making "student learning possible" (p. 7). So, when participants responded to the statement, "I think you can teach creativity" there was no way of knowing which of these three or any other conceptions of teaching they had in mind. Even for those with more experience in fostering creativity (evidenced by survey comments), there might be agreement that you can impart knowledge about creative thinking and creative processes, give students tools and procedures for creativity, and help students' build a sound knowledge base in a specific domain, including well-developed technical skills (see also Berkowitz, 2010; Csikszentmihalyi, 2007; Freiman, 2007), but they still might not call this "teaching". The following comment is pertinent:

> I think that you can teach people skills that could allow them to be creative, but not creativity per se. I also think that it is possible to teach all the skills a

researcher needs, but you can't teach someone to be a researcher. In both cases, the drive has to be intrinsic. (#133, business)

The importance of motivation, attitude or "drive" is clearly a key component of creativity. This confirms Amabile's (1998) argument that motivation is one of three core elements of creativity, namely motivation, expertise and creative thinking skills. Meanwhile Seelig (2012) identifies six elements that constitute creativity for her "innovation engine": they are attitude, knowledge, imagination, culture, habitat and resources. Without motivation and an attitude that drives creativity, the other elements are insufficient for creativity to manifest in practice. I argue that you can "teach" domain specific knowledge and creative thinking skills (using Ramsden's third definition of teaching, i.e. making learning possible), but that motivation to be open to new and unusual possibilities, to deal with risk and to live with uncertainty are modified by dispositional qualities. However, these qualities can nonetheless be cultivated, although achievement levels will vary.

It may be the other more intangible qualities that connect with the affective domain that educators struggle with in terms of whether or not one can "teach" creativity. As a student from case study 1 astutely observed (see section 6.3): "There is a difference between being creative and being taught to understand the principles of being creative" (Hugo, creative writing). The importance of affective elements associated with creativity was pointed out by a practitioner from the creative industries: "Creativity involves the whole person–it's not just about thinking, feeling is also involved, i.e. attitudinal aspects are very important" (design & interior design, #46). In support of this, the literature on creativity confirms the role of attitude in creative development and application (Amabile, 1998; Sternberg, 2006); and research into student attitudes by Rowe, Fitness and Wood (2013) confirms that emotions play a role in *effective* learning (see section 7.4.1).

As a comparison, it is useful to think of domain specific knowledge, skills and practices that may more readily be recognised as "teachable" capabilities. These include, for example, basic mathematical skills, competency with a musical instrument, language acquisition, writing, or computer programming. It may be the procedural component that is recognised as "teachable". However other dimensions of creativity, such as the *facility* with which imaginative connections are made, or the *uniqueness* of the boundary crossing observed in the creative product, or the

excellence of the aesthetic qualities demonstrated that cause some practitioners to be cautious about identifying these dimensions as "teachable". Yet research indicates that creative thinking skills can be enhanced with training and practice: for example, dimensions of divergent thinking such as fluency, flexibility, originality and elaboration (Scott et al., 2004). These training techniques are found to be most effective when paired with other broader strategies that address the contextual environment and go beyond "training". Such strategies include optimising the climate and culture where creativity is fostered, identifying opportunities for personal (career) development to build capabilities, developing creative expertise and capacity, structuring group interactions effectively for creative processes and output, and providing incentives and rewards for creativity (Scott et al., 2004).

Nonetheless, perhaps the view offered by one survey participant that students be "prepared" for being creative rather than "taught" is a good one. No doubt debate about whether or not you can "teach" creativity will continue, as it does in the literature (e.g. Baillie, 2002; McWilliam, 2007; Robinson, 2011). The notion of teaching similarly evolves over time, as epistemologies change, and domains, cultures and fields of experts continue to negotiate its meaning. As the British comedian and scriptwriter John Cleese (London Screenwriters, 2014) observes: "Telling someone how to be creative is easy. It's being it that's difficult".

Finally, it is important to note that "teaching" need not be centred only on the academic in charge of a course, or their supporting tutors. Teaching, coaching, making learning and creativity possible can also be driven by peers (students), as one participant commented (#156). Even in emerging MOOC environments, where the student to teacher ratio can be 1:10,000, in the absence of a teacher peers play a key role in supporting one's own and others' learning and creativity. Having experienced this myself as a participant in two MOOCs focused on the topic of creativity I can confirm this from direct observation and experience.

5.3.2 Assessment

Assessment of creativity involves a problematic interplay between formative activities designed to develop creativity on the one hand, and measuring achievement on the other, without killing creativity on the way. Commentary in the data highlighted this dilemma. Comments such as, "it cannot be measured, but it can be

nurtured and enhanced" (#47), and "creativity is difficult to assess and therefore difficult to separate from and reward uniquely, given required subject learning" (#134, education/marketing), indicate the conflicts educators perceive around assessing creativity.

Contextual issues that impacted assessment cited in the survey included (1) university policy requirements that restrict assessments to two or three items per semester, and (2) reduced resources to provide substantial and meaningful feedback on creative work (e.g. portfolios and presentations). The first issue is a reaction to a genuine pedagogical ideal of avoiding over assessment of students, but it also speaks to the problem of massification of higher education, where staff to student ratios continue to rise, and resources are in short supply. Consequently teachers may feel overwhelmed and lack a sense of agency. Both (1) and (2) also relate to the issue of providing formative feedback to students and the strategy of using regular assessment to keep increasing numbers of strategically minded students, with minimal intrinsic motivation, focused on unit specific tasks. Feedback, and the dialogue, reflection and critical engagement that entails, is invaluable for assisting students inform and grow their ideas. In addition, responding to feedback is an opportunity to test audience reaction to creative work, which is an essential part of the creative process as the case studies later demonstrate.

Nonetheless, there is an opportunity to reframe the problem here and see that the teacher need not always drive feedback, even though students do look for feedback from their tutors as experts in the field. With careful guidance, students can be assisted to develop their skills of critique of creative work so that peers become an alternative source of feedback. This is a strategy that can be implemented where teaching resources are scarce and the apprenticeship model does not apply (see chapters 6 and 7 where the case studies provide evidence of the efficacy of this approach).

As Williams and Askland (2012) conclude, assessment of creative tasks causes students the most angst of all their assignment tasks. Although educators may say "I know it when I see it" (#157), finding suitable criteria to articulate how that decision was reached is important for transparency and creative growth. Further, Elton (2005) observes: "In order to recognise and assess creative work, it is necessary to assess both the creativity and the criticality involved, within the appropriate context" (p. 1).

This ability to make creative decisions explicit is a central concern of exemplary practitioners, and is discussed later in the case study sections.

Adding to the contradictory issues that plague assessment (Kvale, 2007), while "process" surfaced as the most commonly cited element of creativity in the definitions in the survey (refer Table 4.3), it is reasonable to ask if this is reflected in assessment regimes. Is process given sufficient weight in assessments that require a creative approach, or is it only the creative product that is assessed? If process is important to practitioners and creativity, you would expect it to be assessed. However, teachers may find it easier to select criteria to assess creative product rather than the messiness of creative process. Assessment of process can also be resource intensive. In addition, complications may arise where there is crossover in assessment tasks between creative thinking and other cognitive processes (e.g. critical thinking and problem solving). If educators are unsure about whether or not they perceive distinctions between these processes then this may add to problems of communication and selection of assessment criteria. Distinctions amongst these cognitive processes are contested in the literature (e.g. Fryer, 2012; Plucker & Makel, 2010; Vardi, 1999), so it is not surprising that practitioners have difficulties.

Finally, the survey data provided evidence of the changing nature of the student cohort and its impact on the assessment of creativity. Participants affirmed that students are more strategic in their approaches to their studies, "minimising effort for maximum return" (#140, #169), choosing not to take risks with assessment. The literature confirms this trend in student orientation to learning (Barnett, 2007; Gallagher & Garrett, 2013; Kvale, 2007; Reid & Solomonides, 2007; Solomonides, 2013). Of serious concern was the comment from a creative writing academic who said that students are averse to taking risks. If students are avoiding creative risk in a subject with a stated creative focus, what is the situation in subjects where creativity is less explicit? Issues of student engagement and the factors that impact this are the topic of much debate (Solomonides, 2013). Solomonides argues the importance of students developing a sense of engagement and creativity, as these are integral components of transformative learning. Transformative learning may be seen as the antithesis of, or at least inconsistent with, strategic learning.

5.3.3 Creative Self-Efficacy

There was strong evidence from the survey that many educators need more institutional support to be creative teachers, as the confirmed gap between positive self-efficacy and practice illustrated. This is a significant finding: the gap between *thinking* that you can set up the conditions for developing students' creativity (98%), or design for creative learning outcomes (94%), compared poorly with *knowing how to do so* (64% and 67% respectively). These statistics indicated that around a third of practitioners might welcome professional support to be more creative in practice. This problem of creative self-efficacy and the ability to persist with creativity endeavours is documented in the literature (Beghetto, 2010; Tierney & Farmer, 2002, 2011). Support could be provided through mentoring and strategies outlined in Table 5.1 below. It is also worth noting that the top two reasons given in the survey for *not* engaging in creative endeavours were "I do not have the support I need to make the changes I would like" and "I do not have the conditions to implement the changes I would like" (refer Table 4.11).

5.3.4 Professional and Academic Conditions and Scope

Consistent with the literature (Jackson, 2006a; McWilliam, 2007; McWilliam & Dawson, 2007), categories representing barriers to staff and student creativity in this study clustered around resource constraints, the impact of organisational and pedagogical culture and climate that may be resistant to change, and assessment issues (refer section 4.5.3).

The issues of value, competing university agendas and the difficulties of embedding graduate attributes have already discussed (see section 5.2.3). Add to this the finding that only 65% of respondents reported having the *conditions and scope* to be a creative educator is a concern; this is especially significant given that a major focus of universities is teaching, and adequate resourcing is required to support that remit. Students were similarly reported by their teachers to be limited regarding their conditions and scope for creativity, with only 60% adequately set up. However, as one educator from the creative industries remarked about creativity in general:

> Creativity and problem solving need problems to overcome. Sometimes having everything "right" (context, content, technology) can be too sterile and robotic. Constraints due to a lack of facilities, and an incorrect context can sometimes achieve fantastic outcomes. (#34, animation, film and TV)

Paradoxically, this seemingly contradictory view, that creativity needs boundaries, is consistent with the literature (e.g. Berkowitz, 2010; Biles Jones & Flint, 2013; Kaufman, 2009; Milne, 2008; Seelig, 2012; Tharp, 2003), and findings from the case studies, as later discussed.

Nonetheless, conflict around university assessment policies, strategic directions and bureaucratic procedures that affect the ability of staff to adapt and renew subjects allowing for more creative outcomes was raised as a significant problem for educators. The complexity of modern academic life is well documented (Barnett, 2012). However, "what is distinctive about the modern world . . . is not change per se, but its character, its intensity, its felt impact" (Barnett, 2012, p. 66). Competing claims on one's time and energy can lead to a sense of being overwhelmed, a loss of agency and self-efficacy, and of being "caught in the headlights", temporarily paralysed into inaction, to use an analogy from case study 3 (Alex, sociology). Amabile (1998) also cites overwhelming challenge as a disincentive to creativity.

On-going dialogue and a climate of organisational support that acknowledges and rewards creative practice may be a means of resolving this dilemma and allowing for systemic change. As universities are full of creative people (Tosey, 2006) and universities have the capability to operate as "creative campuses" (McCulloch-Lovell, 2010, p. 525), that is, creative ecological systems characterised by "diversity, change, learning [and] adaptation" (Howkins, 2010b, p. 4), creative solutions to these constraints are possible, despite the barriers. Incongruous as it seems, barriers may even inspire solutions.

Table 5.1
Strategies for encouraging and supporting creativity in the organisation

Authors	Type	Strategies
Amabile (1998)	Managerial practices	Challenge–neither overwhelming nor under stimulating; freedom in how tasks are completed but not necessarily what the tasks are; sufficient and suitable resources; positive features of work-groups and colleagues; encouragement from supervisors; organisational support.
Seel (2006)	Conditions for emergence	Connectivity (not fragmentation); diversity (of all kinds); suitable rates of information flow; anxiety containment; proportionate power (well managed leadership); identity maintenance; provision of good boundaries; intentionality (compelling vision); positive emotional space; watchful anticipation (incubation).
Fryer (2006a)	Enabling ethos	Climate conducive to creativity: creativity seen as the norm; supportive peer groups; colleagues happy to experiment; inspiration from others; working in creative teams; having a supportive manager who values creativity; support of external reviewers.
Puccio et al. (2011)	Creative leadership	Cultivate creative leaders who understand the creative process and build a climate for creativity. These leaders model and facilitate creative thinking.

Table 5.1 provides examples of strategies for supporting the emergence of creativity in the workplace and any, or a combination of these strategies, could provide a way forward for universities. The strategies include managerial practices derived by Amabile (1998); conditions for emergence of creativity as outlined by Seel (2006); creative leadership strategies, offered by Puccio, Mance and Murdock (2011); and Fryer's enabling ethos (2006a) derived from the study of UK national teaching fellows. Consideration of the elements indicates that fostering creativity is more than acquiring a set of generic skills; rather it is based on awareness of a complex ecological system impacted by personal, environmental and socio-cultural issues. As Seelig (2012) notes:

> If you want individuals to be creative, then you need to design a habitat in which the incentives are aligned with that goal. If you want teams to come up with new ideas, then you need to provide them with feedback that demonstrates that creativity is valued. If you want your organisation to push beyond obvious answers, then you need to understand that all of life is a game,

and you should craft the rules that reward ingenious solutions to both short-term and long-term goals. (p. 131)

However, as one participant pointed out, if creativity is used by staff to challenge organisational goals or the status quo, it may *not* be valued or rewarded by the organisation: positive outcomes are not guaranteed if creativity is encouraged, paradoxical as that sounds.

5.4 THE IMPACT OF THE TEL ENVIRONMENT: BARRIER OR ENABLER?

Section 5.4 addresses RQ3: What is the role and impact of technology-enhanced learning environments on the development of creative pedagogies?

5.4.1 The Interface between Creative Needs and Technology

Context is acknowledged as an important factor in fostering creativity (Csikszentmihalyi, 1997; Puccio et al., 2011; Seelig, 2012). Responses to the survey indicated that delivery mode (whether face-to-face, blended or online), and the space within which creativity is fostered *does* impact educators' ability to encourage creativity. However issues associated with delivery mode, such as *technology*, need to be distinguished from issues of *pedagogy* and the activities of fostering creativity, despite the close relationship between the two.

Knowing that fewer participants in the sample were familiar with learning and teaching online (40%) compared with on-campus learning (79%), suggests that low levels of confidence in the technology were the result of any one or a combination of the following: (1) a lack of knowledge about how to design or implement creative strategies for this context; (2) negative past experience in these contexts; and/or (3) experiential knowledge that fostering creativity in online environments is more difficult than comparable face-to-face environments. The data provided evidence that participants were less confident in their ability to foster creativity where teacher/student, and student/student interactions were increasingly mediated by ICTs and complex delivery platforms. From this it is reasonable to conclude that a lack of experience with online teaching or beliefs about capabilities in this domain can lead to a lack of self-efficacy, and therefore limit creativity.

The impact of teachers' beliefs and attitudes regarding learning and teaching technologies in general is noted in the literature (Kregor et al., 2012; Reed, 2014).

Notably, few staff in this survey thought they had the technology (58%) or the skills (59%) to fulfil their creative vision. This somewhat negative finding has resource implications for creative capacity building. Further, Allen (2011) argues that for teachers to act as respected role models in creative online learning environments they need to be seen by students as "excellent users of the technologies themselves" (p. 12). While one participant remarked that fostering creativity in any context is difficult (#9), ICTs undeniably add another layer of complexity.

Nonetheless, that obstacles and lack of resources can be turned to advantage in the true spirit of creativity was evident from some participants' responses: "You do not always need to have the latest or fastest technology to encourage or promote student creativity in course or subject design" (#100). Satchell and Dourish (2009, p. 8) argue that this non-use of technology does not necessarily mean "an absence", "a gap" or "a negative space". It can also mean something more active, purposeful and motivated. As the case studies later demonstrate, for certain purposes analogue technologies need to be preferenced over digital technologies in support of creative goals. This "non-use" of digital technologies can be a positive choice to use the most appropriate technology for the job (see section 7.7.5).

It is important to know whether technology-enhanced learning environments provide barriers or enablers to fostering creativity, as interest in this question is not a reflection of a technological determinist position, but premised on an understanding of current trends in higher education. Online learning tends to be seen as one means of meeting student demand and managing large classes (Teaching and Educational Development Institute, 2002), changing patterns of student engagement (Solomonides, 2013), and attendance. If more students are learning online, and there is a vision to encourage students to be creative, then it is important to understand the contextual implications of this, and the interrelationships. It is also critical that educators take an active role in shaping and selecting technologies that meet their creative needs. By attending to "the social and cultural circumstances in which [a] technology was developed" (Green, 2002, p. 5) and proactively interrogating new technologies (Laurillard, 2012), practitioners are better placed to realise their creative vision. This is preferred to uncritical acceptance of transmissive modes of learning and teaching to which some online technologies and systems default, and where creative pedagogies struggle to emerge, as some participants confirmed.

5.4.2 The Affordances of ICTs for Managing Large Classes and Networks

Large classes

The survey provided insights into the role and impact of digital technologies that may support the promotion of creativity where classes are large and learning networks important. In this study concerns about class size relate to research questions 2 and 3 (RQ2 and RQ3), in that large classes can be conceived of as barriers or enablers for creativity (RQ2), *and* as factors relating to the role and impact of digital technologies in the TEL environment (RQ3). While the following discussion focuses on the impact of technologies (RQ3), dimensions of design and pedagogical approach are inevitably interwoven.

The matter of large classes and their impact on the design of meaningful student learning experiences is well documented (Fryer, 2006a; Teaching and Educational Development Institute, 2002); and class size can specifically impact negatively on opportunities for mentoring and scaffolding student creativity (Zehner et al., 2009). Although new digital technologies can be as disruptive as they are supportive, their affordances *potentially* offer tools and solutions for revised pedagogy including more student control and creation of learning experiences, peer-to-peer networking and interaction, feedback, delivery and management of content, and group and class organisation and administration, (Gallagher & Garrett, 2013; Hedberg, 2006; Oliver, 2007). Managing the provision of meaningful feedback on creative work to 200, 500 or 1,000 students calls for creative pedagogical solutions (some of which are described in chapter 6).

Consequently, the survey was an opportunity to gather current perceptions around issues of class size as a factor impacting creative pedagogies. Responses varied widely across the scale indicating multiple experiences and perspectives. A few respondents supplied evidence that creativity could be fostered online, but of special note was the respondent who said class size was irrelevant and reported ongoing success teaching creativity online to distance students (section 4.9.1). The effectiveness of the program was notably attributable in part to a whole of organisation approach, where an enabling ethos was maintained along with a climate conducive to the development of creativity. These are known strategies for encouraging creativity (refer Table 5.1). The recent success of MOOCs offering

courses in creativity online [17] is also evidence that issues of class size, peer-assisted feedback and assessment can be creatively addressed. Having enrolled in a number of these massive open online courses myself I can attest to the efficacy of promoting creativity online via creative group interaction, despite wide geographic dispersion of students. There are of course limitations, and facilitation of creative group processes is key (see section 7.4.7 for further discussion of creative groups).

Class size was not universally regarded either as a positive or a negative factor impacting students' or teachers' creativity: opinions were mixed. The finding highlights a methodological problem in educational research, where one chooses to decontextualise a variable that is actually influenced by a myriad of other factors such as learning goals, teaching strategies, beliefs, student characteristics, student and teacher motivations, physical and virtual learning space, and choice and implementation of ICTs. Teasing out what was behind respondents' beliefs was not possible from the survey data; so hence the value of a mixed methods approach where generalised findings from one source could be compared with detailed evidence from another (the case studies).

Student numbers, large or small, can alter the dynamic of the creative learning and teaching space, just as the mode of delivery (online or offline) has contextual implications. Those inhabiting the space respond differently according to the way contextual elements combine; educational goals and contextual elements can never be ignored where the aim is to foster and design for creativity. Respondents in this survey who valued small classes for fostering creativity saw these environments as spaces where relationships and student trust could be built: especially where critique of creative work was involved. Small classes allow the teacher time to personally mentor each student. As one respondent also recommended, small classes are ideal for piloting new learning technologies before deploying them at scale. Large classes on the other hand require more planning and design, whether online or offline, as "bad course design can escalate very quickly" (#92). However, teachers (creatively), can find opportunities in large classes: "Class size is not the problem, limited imagination is the problem" (#106, business). While some educators understandably struggle with the technology for creative purposes, others in this study were able to

[17] e.g. A Crash Course on Creativity; Creativity: Music to my Ears; Design Thinking Action Lab (Stanford Online/NovoEd); and Creativity Innovation and Change (Coursera)

realise the affordances of the technology and find “incredible great creativity” (#134) with social networking tools, a media library and a class of 700 students (#134).

Networks

TEL environments potentially offer opportunities and tools to assist with the development of networks of peers and mentors for creative purposes. The literature suggests that networks play an important role in the development of creativity, to “develop and maintain strong and weak ties as appropriate, with individuals who possess complementary skills sets, knowledge and resources, and to manage the exchange of these for mutual benefit” (Hearn & Bridgstock, 2010, p. 108). Johnson et al. (2014) report that teachers need to know how to use these networks to their advantage in higher education as the most commonly recorded activity on the web is engagement with social media websites. Although 74% of respondents in the survey affirmed that networks of peers and mentors were important, they provided little commentary on this. This finding confirming the value educators place on networks is significant, especially when contrasted with evidence from the case studies regarding student use of networks (see discussion in section 7.7.5).

5.5 CONCLUSION

The survey addressed the three research questions and the overall aim of the inquiry, namely, to discover more about how educators foster and design for creative learning and teaching in higher education. The findings raised a number of problematic issues and exposed significant areas of difference regarding educators’ perspectives on this.

Firstly, creativity may not be explicit in the discourse of every discipline in higher education: it is polythetic, hidden within disciplinary preferences and constructs, and possibly conflated with other terminology linked to cognitive processes and methods of communication. It is not universally recognised as an intrinsic part of the learning process. Significantly, conceptions of creativity are bound up in notions of teaching, and this affects whether or not individuals regard creativity as “teachable”. In addition, creativity, while valued, struggles to compete with a range of compelling agendas within the curriculum. Like other generic capabilities, it is difficult to embed in curricula (Jones, 2009), and because creativity is perceived as a “fuzzy” concept (Fryer, 2012) there may be a gap between what is

valued and what is taught (Jones, 2009). Also, many educators are likely to find it difficult to realise their creative vision without professional support. Being asked to "be creative" is insufficient to drive change: strategies for supporting creativity, as outlined in Table 5.1, may be useful in encouraging creative learning and teaching at the disciplinary level and across organisations. Further, students are now often very strategic in their learning approaches, and this impacts their responses to assessment. Assessment of students' creative processes can be time consuming for teachers and may not be supported by university assessment policies, adding to educators' problems translating creative vision into practice.

While the affordances of certain technologies (including social media and other ICTs) may assist creative practice, online learning modes and learning management systems (LMSs) present particular barriers for which many practitioners do not feel adequately prepared or resourced. Females, however, have more confidence than males that they can set up the conditions for creative outcomes and use the LMS to advantage for fostering creative learning outcomes.

Finally, while there are considerable barriers to creative learning and teaching practice, there is a view that at least some of these issues can be reframed as constraints that inspire creative problem solving. The motivation and pedagogical creativity of teachers may well be factors of greater importance in realising creative outcomes than having the most appropriate technical solutions.

The survey raised numerous issues that are not easily answered or resolved, but despite the evident complexity this should not prevent inquiry into the phenomenon, or encouragement of practitioners to move ahead with creative learning and teaching. Uncertainty is an inherent element of creativity, and comfort with "being in uncertainties" (Keats, as cited in White, 2010, p. 62) is a mark of the creative spirit. In addition, uncertainty and complexity may mean that multiple alternatives will emerge, rather than one definitive solution.

Having examined the first of the two main data sets, the next task was to account for observations and interviews with excellent creative teachers as they operated in the classroom (online and offline). If a significant number of educators in the survey were unsure about their professional ability to foster creativity, and were either lacking skills, tools or conditions to do so, what would the practices and approaches of exemplary practitioners offer as solutions and pedagogical patterns

from which lessons could be learned? Did exemplary teachers get “caught in the headlights” when asked to be creative? How did they manage this difficult and complex concept? How did they manage the TEL environment, and did their students rely on networks of peers and mentors in their pursuit of creativity? Chapter 6 provides some answers and more “creative re-creating” (Freire, 2005, p. 33).

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Chapter 6 Playing to Get Started: Findings and Analysis of the Individual Cases

> The creative process is the synthesis of knowledge and skills . . . It's about creating an environment where the synthesis occurs."
>
> –Kasumi (case 2)

6.1 PURPOSE AND STRUCTURE

In this chapter the findings and analysis of the case studies are presented in narrative form. The views, motivations and approaches to fostering creativity of five exemplary higher education practitioners are explained and discussed, each within the context of a specific unit in which they teach. The lecturers' views are supported or contrasted with those of a sample of their tutors and students, and this provides a constructed view of creative educational praxis. The case studies present detailed findings that complement the generalised results of the survey.

Following a general introduction to the cases, sections 6.3 to 6.7 describe, explain and analyse each of the cases separately. While the cases are similarly structured, they unfold somewhat differently in order to reflect case variation. Cases 1, 2 and 4 are more overtly associated with creative expression or design, while cases 3 and 5 provide contrast as creativity might not be expected in these units (subjects), or they could have been presented more traditionally with less creative emphasis in other contexts and by other teachers. All the cases demonstrate and realise creative outcomes. At the end of each case narrative there is a visual learning design pattern that is linked to a text-based version of the learning design (found in Appendix I). The chapter concludes with a short summary that leads on to chapter 7 where the multi-case set is discussed on a thematic basis.

6.2 THE MULTI-CASE SET

Five cases were chosen in accordance with the criteria outlined in Table 3.1, maximising cross-disciplinary difference and delivery mode. As it happened, all the cases are from the creative industries/social sciences spectrum. This was a result of finding suitable cases that fitted within the scope and timeframe of the PhD research program. Pseudonyms were assigned to the five exemplary teachers (Anna, Kasumi, Alex, Leo and Isla), tutors and students. Each exemplary teacher was a unit

coordinator. A specific unit was chosen as the focus for each case study but, where relevant, other units referred to by interviewees were included in the discussion. Titles for each unit were altered to assist with anonymity, and some specifics of the teaching context have been "blurred" to further aid anonymity and meet ethics requirements. The case numbers represent the order in which data from the cases was collected (see Figure 6.1).

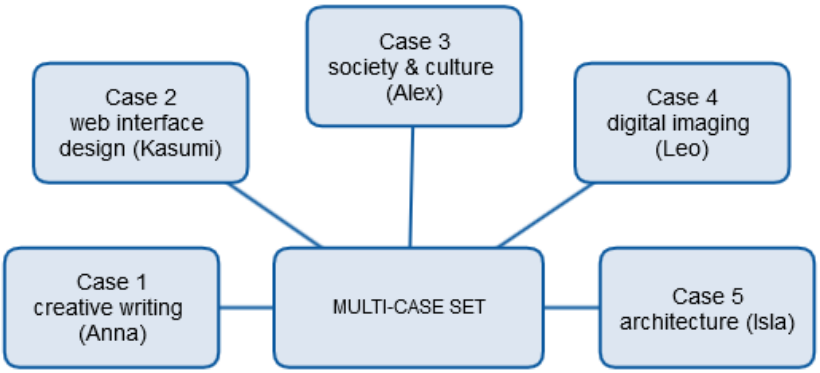

Figure 6.1: Multi-case set.

In all, 20 teaching staff, 10 female and 10 male teachers (lecturers and tutors) were interviewed, and 31 students, 18 females and 13 males (N = 51). The cases were based at public, multi-campus, metropolitan universities: one in Queensland, two in NSW and one in Victoria. Class sizes ranged from about 120 to 1000 students, and all were undergraduate and varied from 100-level to 400-level (first to fourth year). In cases 2, 3 and 5 students could only enrol as internal (on-campus) students; case 4 allowed only for external (off campus) enrolment, and case 1 allowed for either internal or external enrolment.

Table 6.1

Demographics and context of cases

Element	Case 1: Anna	Case 2: Kasumi	Case 3: Alex	Case 4: Leo	Case 5: Isla
Unit name	Creative Writing	Web Interface Design	Society and Culture	Digital Imaging	Professional Practice for Architects
University	NSW metropolitan, public teaching & research university, established 1960s, 39,000 students	Queensland metropolitan, public teaching & research university, established 1990s, 44,000 students	NSW metropolitan, public teaching & research university, established 1980s, 40,000 students	Victorian metropolitan, public teaching & research university, established 1990s, 82,000 students	Queensland metropolitan, public teaching & research university, established 1990s, 44,000 students
Unit level	Elective 200-level unit	Compulsory 200-level unit for students completing a specified major, otherwise an elective.	Compulsory 100-level unit for students in the arts faculty, elective for students outside faculty	Elective 100-level unit	Compulsory 400-level unit
Unit student cohort	c. 140 students, majority on-campus recent school leavers; plus additional OUA enrolments–mainly mature age	c. 120 students, mostly recent school-leavers with a few mature age students	c. 1168 students, majority recent school leavers, first year of university from the faculty of arts; some from other faculties	c. 200 students per session; 1000 p.a.; majority recent school leavers, from any faculty, plus OUA enrolment–mainly mature age	c. 260 students; majority students in final year of architecture degree
Enrolment/ delivery mode	On campus (internal) or fully online/distance (external)	On campus only	On campus with some online attendance options	Only distance (fully online)	On campus only
Tutors interviewed	3 (female)	3 (1 female, 2 male)	2 (1 female, 1 male)	3 (1 female, 2 male)	4 (1 female, 3 male)
Students interviewed	5 (2 female, 3 male), (group & individual interviews)	8 (7 female, 1 male) (2 group interviews)	11 (5 female, 6 male) (2 group interviews)	4 (2 female, 2 male)	3 (2 female, 1 male)

The exemplary unit coordinators were full-time, experienced lecturers, with heavy teaching, research and administrative workloads. All had received public acclaim in their field and/or teaching awards, either through internal university teaching awards and/or national teaching awards. Tutors were all casually employed by the university, with a mix of industry employment (9), and/or artistic practice (5), and/or higher degree study (3), which they maintained alongside their university commitments. One tutor was a retired university lecturer. Students interviewed were undergraduates, ranging from their first to their fourth year of study, and the majority were enrolled internally for the unit that comprised the focus of the case study. Only 5 out of 31 students interviewed were enrolled externally (see Table 6.1).

6.3 CASE STUDY 1: CREATIVE WRITING

6.3.1 Background

Anna has been teaching creative writing for over twenty years. She is a senior lecturer and published author who researches her writing genre (poetry) alongside the theory and practice of creative writing. She is the recipient of an internal university award that testifies to her excellence as a teacher. She teaches and supervises postgraduates, and coordinates undergraduate 200- and 300-level creative writing units. The 200-level unit is the focus for this case. It is offered concurrently to internal (on-campus) and external students (distance/online), in parallel with an online offering for Open Universities Australia (OUA)[18]. There are about 140 students in the undergraduate (non OUA) cohort and tutorials average 20 students in each. She conducts the fortnightly lectures for the unit and facilitates three of the weekly two-hour tutorial groups herself. Three of her four tutors were interviewed (3 females), one of whom tutored OUA students as well as internal students, and another who tutored only online students from her home in another state. Five students were interviewed (2 female, 3 male): one was an external student, and the other four internal students were representative of the student cohort for the unit, which was mostly students in their early twenties, with a few mature age students. (OUA students by comparison are typically mature age students, somewhat differently motivated in terms of final goals. None was interviewed for this study.)

[18] OUA is a broker for online distance education courses for professional education and higher degrees. It emphasises equal access and open entry. http://www.open.edu.au/

Anna came to creative writing because of her "need to know", that is, as a means of coming to know herself and her history as a migrant. Writing helped her connect with her new life in a new country, her family history and memories. She is well respected by tutors and students for her high standards, her pedagogical approach and the care she takes with students. She emphasises the need for a focused approach to building writing skills, and the accompanying hard work that entails. Both Anna and the tutors stress the importance of structured exercises to stir the imagination and develop the craft of writing, encouraging a mindset that finds inspiration by being open to the world within and without. Anna models creativity through her creative practice, her published works, her engagement with a poets' collective, and her contribution to research in the field. She willingly shares her own personal approach to the creative process with students, and in so doing often uses memory as a trigger for idea generation. Creativity is clearly important to Anna as she remarks on its place in the wider scheme of things:

> I think it's broader than just me. I think it's really important for our society that people are able to be creative, because creativity means that you can change, and that you can adapt, and that you can meet challenges because you're not stuck . . . it's that opening up of rigidity, it's towards flexibility. And . . . I think they're going to need that in the future . . . I think we all are. (Anna)

6.3.2 Playing to Get Started: Sourcing Creativity

Anna argues that creativity comes in and through the writing, it is in everything, even in the "aha!" moments when you are writing an academic paper. To find creativity, Anna encourages students to use and discover their imaginations, to go beyond where they feel comfortable, beyond bland, beyond copying, and beyond being derivative, in order to develop their own voice.

> So stop writing about vampires. How can you make a vampire new? Well, it's very hard, so just don't go there. Why, when you're setting a crime story, must it be New York? I feel as if my fight is against the influences that are coming into their lives, which are *so* powerful, you know. And it's not that I'm against all of that but how do they develop an individual voice within that *cacophony* of *stuff*? (Anna)

Sourcing and finding material is also part of the creative process, and students have to be "free to let it come; to let what comes, come". Anna does not ask them to "be creative" because she sees that as counterproductive. If they feel they are "doing creative writing" then they "freak out". So in the very first lecture Anna sets them a free-writing exercise to get them started and to play a little. She begins with stilling the mind by asking students to meditate for a few minutes. They then place themselves in a scene that she imaginatively paints for them: for example, they are overlooking an old apartment block, there's a laneway and the door to one of the apartments is ajar. There's a bicycle leaning against the wall, the curtains are open, and you step inside, and then write what you see happening there. The students respond individually, in silence, in the lecture hall, writing in an environment where there is no pressure to share or reveal their writing; but they have been motivated to create something, to put words on the page in a safe environment. Potentially they leave the lecture hall empowered and motivated to write more.

Two other elements that potentially block students' creativity according to Anna include understanding the concept of reflection as it applies to the creative writing process, and the notion of "finding voice", that is, their own creative writing style. It may be that students feel trapped by high expectations and the unknown, or the uncertainty that these concepts bring. The term "creative writing" is also part of the problem in Anna's estimation: she would prefer to talk about "good" writing. Anna's way around these loaded words is to use models of excellent writing and set structured, stimulus activities that employ all students' senses in their writing, and extend students "beyond where they think creativity is" (Anna).

This practice of modelling where to find creativity, moving into a state of flow (Csikszentmihalyi, 1997), of thorough absorption in the task, is also exemplified by the excursion where Anna meets her students at the art gallery on campus. Anna and her students spend the tutorial in the gallery, using the paintings as inspiration for writing. Anna explains to them:

> It's you now, in *your* creative process, engaging with *somebody else's* creative process . . .You're speaking one-to-one, if you like, across the art forms . . . be creative in your viewing, bring your creative mind . . . be open. (Anna)

The students sit or lie on the floor with their notebooks. "It's quiet, it's actually lovely," she says. Anna testifies to the energy in the room when all the students are

writing and imagining, and says that everyone feeds off that. She sometimes writes herself during this time. “To me, that’s where the creativity happens, with the forgetfulness, where you’re just so engrossed in the task” (Anna). She explains further:

> Creativity for me is the sourcing of the material. Where does it come from and how do you make it into something when it starts out as nothing? That’s for me the creative energy. So finding material, then making something out of it is a creative process. (Anna)

But finding creativity does not stop with generating ideas. Anna and her tutors all emphasise doing more to shape the writing, “not just tinkering at the edges” (Kate, tutor). As one student remarked: “Anna says good enough is not good enough” (Phil, student). Knowing what is “good” writing, requires building a set of criteria by which creativity can be judged, and this is informed by reading copiously, which students apparently tend to do less and less. Success can rely on how well an idea is developed, and that may depend on how much the student has reflected on life and on the writing process, how much practice they put into the craft, and the way students connect and combine ideas and language with their own voice. Anna and the tutors encourage the students to look inwards, but acknowledge that some students are not yet ready to do this.

Success with creative writing may be realised in the imagining or the execution, as one of the tutors observed. For example, “somebody with a creative use of language can turn the tiredest old plot into something fabulous” (Beth, tutor); others have a unique way of looking at the world, or a fresh way of connecting and combining ideas that makes their writing exceptional, or they have the voice but not the vocabulary; others barely manage to demonstrate creativity by creating something new on the page that has not existed before. How do you know if creativity is working? One tutor explained it this way:

> I can tell when I have a student who’s a really good writer, and who is doing really experimental things, and it’s working, because they understand. I guess they may be consistent in what they’re experimenting with and it’s logical. Even if it’s abstract, or very postmodern, there’s still some sort of coherence to the work–whereas others might experiment with time shifts and point of view and whatever, and it ends up just being sort of messy. (Eddie)

All four teachers spoke about variation in standard and how this was influenced by students' motivation. Students who regularly practise their writing, try new things and take risks go furthest. Dealing with student expectations and failure, however, when risk does not pay off was an ongoing issue. This also included dealing with some high achieving recent school-leavers who struggled with "unlearning" what they had learnt at school, and dealing with disappointment when their concept of writing was not valued in this setting as it had been in the previous one. Their response could be, "Well what do you want me to do?". This demonstrates that with changes to context and the field of experts applying judgement to the creative output, greater or lesser value may be assigned to the creativity demonstrated. Dealing with uncertainty is unsettling and difficult.

6.3.3 Workshopping: Designing and Setting up the Conditions for Creativity

Anna is always ready to experiment. "So the way that I've always thought about it, is about creating an environment, a learning environment, in which students can be creative. And I've tried all sorts of ways of doing this." One of the key strategies is the workshopping process, where students share and critique drafts of their own and classmates writing. During this iterative process students give and receive feedback, learning to reflect and develop a language for differentiating good from more limited writing. Reflection is an extremely important part of this iterative process and students are introduced to reflection from the first lecture. From there it carries on through the tutorials and the assessments and is articulated in the unit outcomes. Student evaluation of Anna's classes confirms that workshopping is the most valuable part of the student experience for her creative writing students. Anna is nonetheless aware of the risks students take in this environment:

> I'm always amazed and *impressed* by their willingness to share their stuff . . . But I do give them caveats. If you don't feel comfortable sharing, then don't, write something else, bring something else . . . So it's a line that I guess we tread if we're in the creative arts, where we're expecting our students to bring quite a lot of themselves to the learning and to the classroom situation. (Anna)

However, this aspect of fostering creativity through writing where students do reveal much about themselves has a darker side, as some students reveal serious issues about themselves that indicate the need for contact with counsellors. The teachers are alert to these situations and the need to call in outside support.

In the 200-level creative writing unit the first three weeks of semester are about "play", and building a knowledge base around techniques and approaches to different writing genres. From week 4 workshopping begins in earnest. Students are rostered to share drafts of their creative work with class members in their tutorial. Whether they are internal or external students they upload a file to the unit website (Moodle) for distribution. The tutor and students provide constructive feedback, and internal students annotate a printed copy of the draft, while external students make annotations to the online file and re-upload it for distribution. Internal students discuss the draft during face-to-face class discussions; external students do all their workshopping online via the discussion board. As a support for the workshopping process students have lectures, in class (or online) writing activities, set readings as exemplars and models (excerpts from journals, poems, short stories etc.), which relate to the weekly thematic topics.

6.3.4 Assessment

One of the first comments that Anna made during our initial interview was, "sometimes you're up against *a lot* when you're trying to bring creativity into the coursework as assessment. You know, it's an absolute killer". The problem has its origins further back in the school system in Anna's opinion, as she says over their school years children lose their capacity for creativity: "most, not all". "By the time they get to university, it's been *so* knocked out of most of them." [19] In response, Anna's four key strategies for *re*-engaging students with their creativity are through her development of the curriculum, paying attention to what goes on in the classroom (online and offline), creating activities and learning spaces for play, and her assessment practices.

[19] This observation is backed by researchers such as Robinson (2011), and Welkener (2004) who argue that students may exit the school system exhibiting less creativity than in their early years of schooling or develop negative creative identities over the K-12 period.

While students regularly share their work and receive formative assessment from tutors and classmates, formal assessment is individually based on an initial creative/reflective piece (10%), two completed pieces of creative writing with accompanying critical reflective essays (30% and 40%), and participation (20%), which includes contribution to workshopping (in class or online, depending on enrolment status as internal or external students). From the assessment regime it can be seen that the assessment stakes are gradually raised over the semester as creative abilities develop.

For Anna, one important assessment strategy is to not assess everything, even though she says students are now so strategic they "will only do things if they're going to be assessed on them".[20] Implementing "low stakes" assessment is one way of addressing this dilemma. Students want as much feedback as they can get, but Anna strongly indicated, "*I do not want to do marking every week*". She has 60 or 70 students in her own 200-level tutorials and her writing units have higher workloads than others within her department. The first assessment is worth only 10% and requires students to reflect on the process of writing a creative piece. In addition, the overall participation mark (20%) includes active and conscientious engagement in the workshopping process and being responsible for contributing to the shared learning space. Another low stakes assessment is the one available for 300-level students who submit a portfolio of writing exercises completed over the semester. This includes at least one of the stimulus exercises from each week, and two of the exercises developed to a higher level or completion, beyond first draft. The criteria for process work are different to the criteria applied to the more polished assessable "products". Whereas the portfolio is less formal and rewards *process*, effort, engagement and reflection, the final creative works are assessed as *product* via criteria such as realisation of form, language and structure as well as the accompanying critical reflective essay. "The folios are just beautiful to read," she says, and submissions may include hand drawings, sketches, images and diagrams, as well as printed word-processed files. The portfolios from those less engaged students are not of this standard, however, but she laughs: "The ones who aren't engaged won't do anything decent, ever, anywhere".

[20] This confirms findings from the survey regarding students' strategic approach to learning.

Nonetheless, despite their value for assessing creativity, the portfolios present a dilemma, and at the time of interview Anna was in two minds about whether to omit them altogether. This was because the workload entailed in marking them was so high. The alternative was to make the portfolio the major assessment; however, the latter strategy conflicts with university policy, as a finished piece must be assessed and the trend is to push for marking everything online. Anna had just begun marking creative pieces and reflective essays using an online marking tool, GradeMark, linked to the LMS, but the portfolios do not neatly fit into the format for this. Here, contextual issues are working against preferred methods of teaching and assessing creativity.

6.3.5 Tutors' Perspective

In addition to comments above, tutors confirmed Anna's excellent design of the unit and stressed their role in supporting, guiding and facilitating students' creativity. As to whether or not you can "teach" students to be creative, one tutor commented:

> I think that students can definitely develop their creativity. But I'm still undecided as to whether you can learn to be creative, or that you can teach someone creativity. Because I think some people have it and some people don't. (Eddie)

And another:

> Sure there are always going to be people who may have more of an imaginative mind . . . but at the same time I think creativity is hard work . . . it's a learned skill . . . it's not necessarily this thing that you just *get*. (Kate).

The need for a work ethic and a structured approach came through continually in the interviews. One tutor summed up the expectations tutors have of students, namely, that they be creative in their writing, reflective, able to interpret text, learn from the workshopping process, and learn from others and their own mistakes and weaknesses in order to grow. "I think being creative is about being more aware" (Beth, tutor).

The importance of building a community for supporting creative writing was raised by two of the tutors. The interstate tutor said she encourages students to

upload photographs for the memory exercise[21] to the discussion board to make the shared space more trustworthy and personal:

> I really believe in creating rapport with the students and creating a social community, almost like a family, especially with creative writing, because you are sort of sharing the things that the students are creating, they are like their babies and it can be really scary, I guess, to share each other's writing. (Kate)

Similarly, a tutor of internal students who also taught on English literature units pointed to the special nature of the creative writing classroom: "That two hours in the writing workshop, it forms a bond that you don't get in any other class" (Beth). Nonetheless, there are still problems of communication in the online environment, and with fewer cues as to how students are engaging in the process, and fewer opportunities for spontaneity, tutors find the experience different to the immediacy of the face-to-face environment.

6.3.6 Student Responses

Some students mistakenly enrol in Anna's unit thinking it will be an easy ride, but soon learn that it is challenging, and it is difficult to get good marks. The students to whom I spoke seemed comfortable with developing their skills and were well able to reflect on the writing process. They understood the importance of "flow" and were able to list contexts that supported creativity and others that presented barriers. The facilitative and supportive approach of the teachers was clearly motivating, and they respected the stress on hard work and not settling for less. One student could not understand students who complained about the workload or keeping up with the set readings, which, she said could be managed during her bus ride to the university.

In terms of perceptions of creativity, one male student astutely pointed out that, "there is a difference between being creative and being taught to understand the principles of being creative" (Hugo). Another mature-age student from a business background, used to more structured report writing, said creative writing was about learning to be comfortable with unstructured creative thinking for the imaginative and generative phases; the necessary structure and planning comes later.

[21] This is an exercise where Anna invites students to access their own memories by writing a poem or narrative piece beginning with the words "I remember, I remember, I remember".

The students enjoyed the directed, skill specific, in-class exercises, where they wrote silently, surrounded by other writers working in close proximity. After 10-45 mins they stopped and read aloud, or discussed results with the group. Two of the students I interviewed valued this free writing time more than the workshopping process. One said she had an aversion to online learning, but would willing do all the workshopping online if that gave them more time for in-class writing (Kris).

The workshopping process is valued nonetheless as students appreciate the importance of putting their work out there amongst their peers to gauge audience response. For example:

> The biggest thing I got out of it was seeing audience reaction, because when you write something you never really know, is this good? . . . And I normally look at the eyes . . . seeing sort of the energy and the enthusiasm that they are speaking with." (Jake)

Students still see flaws in the workshopping process, as some feedback is valued while some just gets thrown in the bin.

> [There are] three or four amazing students in my class and it's like their English critique is on steroids. So with their feedback–I really look over that. But there are other students where I just don't even bother. (Kris)

Peer feedback, however, provided an audience and a range of diverse opinions that students valued and, as two students commented, peer and tutor feedback gave them the confidence to work harder, to change the story, or let go of what was holding them back.

6.3.7 The Impact of Context, ICTs and Delivery Mode

While most students workshop in the face-to-face environment, a proportion workshop only online, and their whole experience of creative writing classes is computer mediated and predominantly a solo experience. For example, to do the meditation and free writing exercise mentioned above (section 6.3.2), the external student said that he had to find a time alone to settle to the task when he was not stressed. He did not have the benefit of the scheduled quiet writing time that internal students had (together) during the lecture. He could go to a library and sit with other people reading and studying to try and replicate this environment, or he may have

family or friends studying at home with whom he could quietly work, but this may not be quite the same. So though he missed out on the *energy* of the group that Anna referred to, he seemed happy with the online experience, and confirmed that the delivery mode and the flexibility it provided did not inhibit the development of his creativity. Like the other students interviewed, he preferred to be creative on his own.

So for some students, the impact of delivery mode is considerable: it is the classroom environment through which their creative development is facilitated. The design of the course and facilitative role of the teacher is key. It does not matter how crowded the classroom is for online students, they are unlikely to ever see the eyes of the person providing peer feedback to them, as all communication is either text- or audio-based (in case 1 at least). The creative writing classes have been offered online for some time and tutors confirmed the efficacy of Anna's well-structured curriculum, the clear goals, and the guidelines and boundaries within which there is exceptional freedom to develop creatively. The interstate online tutor confirmed the positive aspects of the online experience: "Some people online are fantastic and . . . a good thing with teaching online in these creative writing courses is that people do get time to reflect and think about the comments that they post up" (Eddie).

Moodle, the learning management system (LMS), was used by all students as the central point for unit communications. It housed the recorded audio lectures for external students, and was the means by which workshopping items were distributed. For the external students, the LMS discussion board was critical for supporting the workshopping process. For the 200-level creative writing unit, an additional interactive online task, using a collaborative tool called LAMS (Learning Activity Management System) provided scaffolding and feedback for one of the more difficult conceptual elements of creative writing known as focalisation. Anna confirms that students like the task, and tutors and students generally agreed it was a support for developing writing techniques, but it did not generate the passion in students or tutors that either workshopping or free writing tasks did.

In case study 1, the use of ICTs was integral to the functioning of the unit and facilitating processes that support creative development. Yet there was never a sense that digital technologies dominated, and students were happy to adopt tried and true analogues like paper, pen, and coloured pencils as appropriate. This suggests that

Anna's educational design of the unit optimally integrated technology and pedagogy, and students were using the appropriate tools–as creativity demanded. As one student said:

> I have to admit I am a Facebook and technology addict. I love using social media and various apps on my iPhone to communicate with my friends. But when it comes to writing I do prefer to sit down and use a pen and my notebook. (Hugo)

The noticeable lack of reference to social media as a support for creativity and learning in the unit suggests, perhaps, that to some degree students (and tutors) *were* dealing with the distractions and noise of the outer world that can block creativity. Could creativity be an antidote to the everyday cacophony? As Anna argues, creativity is about learning to think for yourself:

> [It's about] learning to trust one's own creative mind and one's own responses as against this noise of the world that comes at us all the time, and all the thought bites and the tweets and the twitters which everybody's engaged in that's telling you how to think.

6.3.8 Learning Design Case 1: Workshopping Creative Writing

Figure 6.2 provides an overview from the student's perspective of the steps and creative processes required for workshopping, as described in section 6.3 above. Often learning design patterns present a sequence of activities represented by the elements *tasks*, *resources* and *supports* (see e.g. Agostinho, 2011; Australian Universities Teaching Committee, 2003; Kearney, 2009). Tasks are typically what students do, resources are usually the key materials (artefacts) required for the task (although it is recognised that people can also be resources), and supports may be human interventions, documents and/or ICT applications and services. There can be misunderstandings about the difference between a resource and a support (Agostinho, 2011), but specification of the elements may remove some of this confusion.

For the purposes of this study I have chosen two different forms of learning designs to represent the five designs presented in chapter 6: one a text-based form and the other a visual model. The detailed text-based patterns are based on a variation of EnRoLE Project models (Wills, 2006-2009). The EnRoLE model

allowed for the inclusion of the usual elements (tasks, resources and supports), but was sufficiently adaptable compared with other models to highlight the creative components of the design. It was possible to use the model to frame each activity while at the same time allowing space to indicate fluidity and choice within the framework. Each text-based design contains a description, keywords, the target audience, group size and setting, the timeframe for the activities, a list of creative learning opportunities (learning outcomes), resources, supports, and the sequence of activities. The models are quite lengthy (two pages per design), so they have been included as appendices (see Appendix I).

The visual model of each learning design is provided in this chapter at the end of the relevant case study discussion. It is my own original model and depicts not only the steps in the activity, but also the likely creative processes encountered by the student in pursuing the tasks. Again the aim of the model is to represent a framework within which there is maximum space for student creativity. The two forms of learning design, the visual model (Figure 6.2) and the text-based model (Appendix I), are intended to complement one other. The text-based version principally represents the teaching perspective, and provides detail and strategies that are not possible to include in the sparser visual form. The visual model focuses more on the student perspective, engagement of the student in creative processes, and likely episodes of interaction between student and teacher, and student and peers. Further discussion of the learning designs as a set follows in chapter 7 (section 7.8.3).

The first learning design (see Figure 6.2) shows the six steps a student undertakes in the creative writing workshop process (left hand column). The right hand column shows a *selection* of the probable creative processes that accompany each step. The period of time where support from the lecturer or tutor is required is indicated by the figure on the right hand side (i.e. throughout semester), and the cooperative involvement of peers during steps 4 and 5 is indicated by the second figure on the right hand side. The activities overall take place over 3 to 12 weeks depending on when the student nominates for the workshopping process. Step 1 occurs at the beginning of the semester, and step 2 could take any number of weeks, depending on the student and their writing progress. Steps 3 to 5 usually take place over one week, and step 6 could be from one week to infinity.

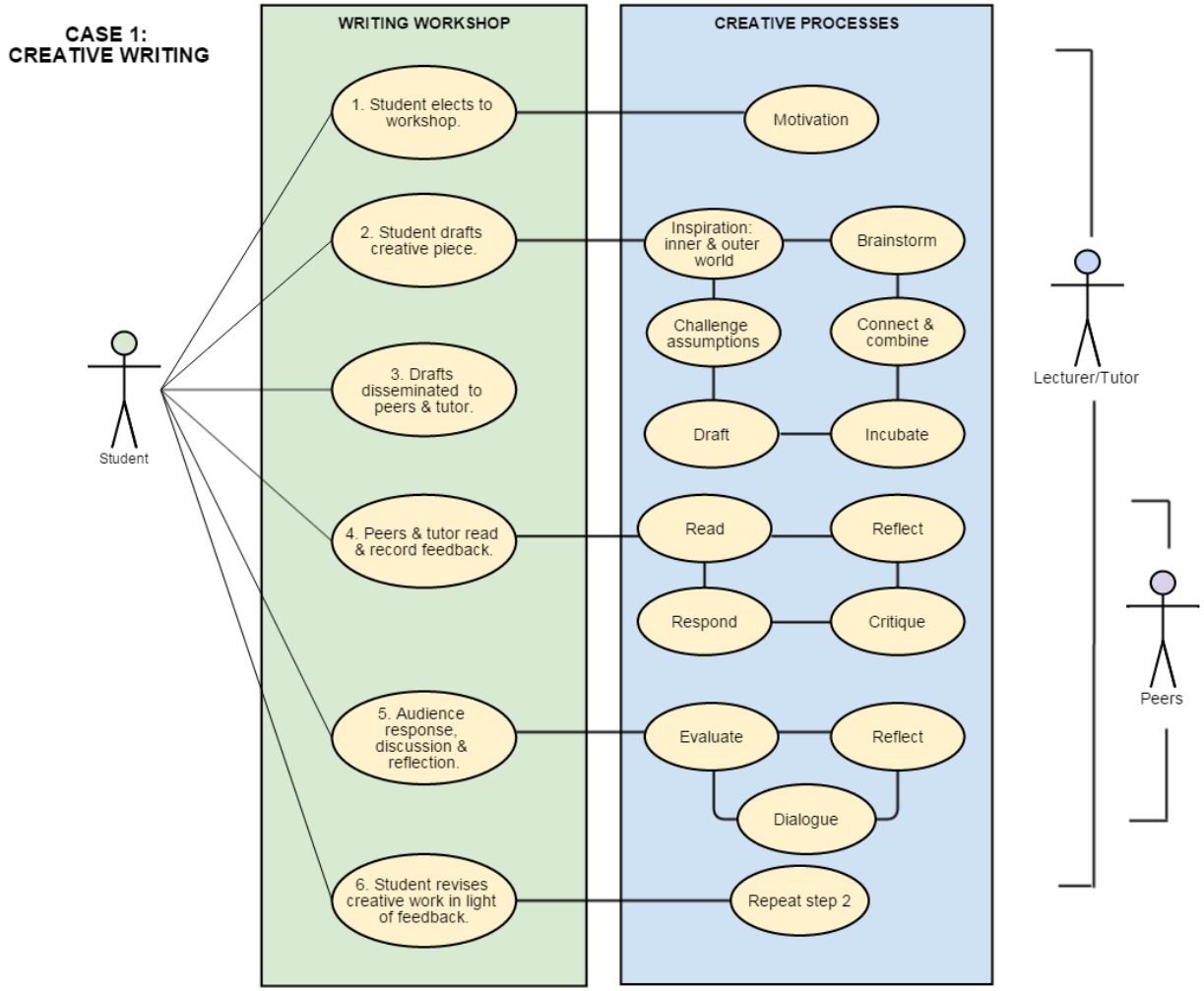

Figure 6.2. Learning design case 1–writing workshop.

6.4 CASE STUDY 2: WEB INTERFACE DESIGN

6.4.1 Background

Kasumi lectures in web interface design and computer gaming, teaching undergraduates and postgraduates at a multi-campus, metropolitan university. She comes from a visual arts background, has been teaching in higher education for eighteen years, and is an independent designer working in the field of digital gaming and creative social networks. She recently completed her PhD in interaction design, has been a keynote speaker at a digital media conference, held a Fellowship at a Cooperative Research Centre (CRC) and received awards for her exhibited work. Kasumi sees herself as a designer first and an academic second, but her aim is to maintain a 50-50 split between industry work and teaching in order to maximise the opportunities for a creative life. "I couldn't live without it" she said, meaning creative practice. "I have this love of the creative process and this love of the language around design and art. Teaching is an opportunity for me to not sacrifice all the yummy stuff that happens in my practice."

The unit of focus for this case is a 200-level web interface design subject that Kasumi coordinates. The unit is designed to enable students to develop their skills, creativity and practice in information, interaction and visual design. By the end of the unit successful students are expected to have used various tools and techniques to code, create and articulate a prototype web design (e.g. an app for a smart phone or tablet computer). The unit is offered internally (on campus) to about 120 students via one 90-minute lecture and one 90-minute tutorial/computer laboratory session per week. Students typically come from backgrounds in IT, visual arts, fashion and the arts/creative industries. In the past the cohort was limited to specially invited students, but now a broader mix of students are permitted to enrol without interview.[22] Eight of these students were interviewed in two group interviews (7 female, 1 male), and they were in the 18-24 age bracket, pursuing a major in interaction design. The three tutors were interviewed (2 male, 1 female), and all combined industry employment with casual university teaching. Kasumi, the tutors and the students all attest to the hard work and the challenge the open-ended tasks entailed in this unit.

[22] This is similar to the situation for students in case 4.

Through the weekly technical tutorials and conceptually focused lectures students are encouraged to develop the means and language to visually articulate concepts, critique their own and others' work, evaluate professional tools and technologies, and respond to a design brief. Kasumi aims to inspire students towards excellence by demonstrating successful design processes and outputs. She combines theory with evidence from practice and draws on examples selected from her own work, other experts in the field, and the work of past students. During the tutorials, tutors concentrate on developing students' technical skills, knowledge base, and awareness of web-based tools (mainly HTML5, PHP, and CSS3). While students primarily work individually in the tutorials, there were opportunities every three to five weeks, as part of the assessment regime, to present work in progress as posters: these are critiqued by tutors and peers in a cooperative and friendly atmosphere.

6.4.2 Approach to Creativity: The Creative Life

Through interviews and classroom observation, Kasumi's passion for teaching and interaction design shines through. She is enthusiastic, direct, welcoming, humorous and motivating. She embodies the energy she seeks to foster in her students. Like Anna, Kasumi has reflected closely on her teaching and creativity. Nonetheless, Kasumi says that while she uses the word creativity with students, she struggles with it; it is problematic for many reasons. "This is why I don't really like the question about creativity, because every time I make a statement my head is almost telling me the opposite of that as soon as I've said it." She explains the term to her students by talking about creativity as energy, iterative practice, exploration, effort, hard work, and seeing the world in a different way, "through the colours and shapes and textures around you". But to me she immediately qualifies this characterisation of creativity by saying: "it's not *enough* of a word". I take this to mean that there are so many different interpretations and expectations of creativity, from herself, the tutors, students, industry, and the university, that is, from the *field* (Csikszentmihalyi, 1997) in which she operates, that by using these other terms, she has found a way of managing expectations of creativity in the context of her teaching and assessment praxis.

Kasumi's vision for student learning is to transform students' view of the world. Paradoxically she says, "I think learning should be hard, and learning should be fun, absolutely at the same time". "You have chosen a creative life", she tells

students in the first lecture. “You are not just in a creative discipline.” To achieve this, she inspires students to realise that “the creative process isn’t outside of your life or your world. It’s both the world and you”. She gives students permission to be creative and forge their identity around creativity, adding that interaction design is not just a job, it is a passion, a creative calling, and that they will often meet frustration on the way. Kasumi is also clear that there are two main processes in the act of creativity, whether you are an artist or a designer: (1) the first is “to recognise, identify, discuss, and articulate creativity, to develop your eye and your language around these things”; (2) the second is “the act of application of creative processes and making something creatively”. She believes she needs to do three things to help students get to this point:

- give them the foundations and the language to articulate these things (from art theory, design theory, semiotics, philosophy);
- motivate them (e.g. through case studies, critiquing, demonstrating creative work of others and self); and
- model expectations through her own creative practice; demonstration is one of the most important things.

From the very first lecture Kasumi clearly communicates her expectations of students, namely that they will develop their creative and critical capacities, their visual acuity and appreciation of the user experience. For example, during an early lecture she relates these ideas to a real world example using an image of an air traffic controller seated at work at his computer. She invites the students to critique the image with her. She queries them about the probable user experience, the human computer interaction, form, composition, signs, symbols, branding and imaging. She explains the importance of communication in all its forms and the need to articulate ideas verbally, graphically and through coding, and the technical, conceptual and practical choices designers make. Her examples use multiple media sources: film, posters, paintings and photographs, and she draws on the work of past students, many of whom are now in industry.

During this process she challenges students to think about their contribution to design and *their* place in the world. What are you going to do that is new and different to make your mark? At the same time she stresses the role they are likely to

have in industry: “interaction design is not just about what you as the designer want”. The final creative output is, in part, a result of communication and collaboration with clients. Further to this, Sam (the most experienced tutor), explained that differentiating oneself from the creative product is a learned skill and crucial in this context; that is, students need to learn how to “criticise the *work*, not the person”.

Kasumi wants her students to learn the value of a sophisticated design response. As Kasumi models the process of critiquing images, websites and games, probing students to answer questions, displaying more images and websites, she challenges them further to know where value lies: “What is great work? Why is it great? What have they used to make it great?”. She reinforces the need to be confident about their own decision-making. “Don’t underestimate your decisions in interface design; you are creating new understanding by what you design . . . Reading images is never stable.” These comments remind students that interpretation is fluid, dynamic and individually constructed. Her maxims are “elegant design is attractive, timely and intelligent”. Importantly she encourages students to notice where the turning points are in idea generation and decision-making processes: “Look for the ‘aha!’ moments. Pay attention to them and don’t overlook them”. Clearly for Kasumi creativity is not just about coming up with ideas; critical thinking and evaluation are also essential.

Further to clarifying expectations around creative work, Kasumi clarifies roles within the learning process. She communicates what she expects of students, and what they can expect from the field of experts around them, their lecturer and tutors. She continually sets boundaries within which the creative product can be developed and assessed. She revisits the design process learnt in previous units to ensure they are building on prior knowledge and the work of others.

6.4.3 The Creative Environment

“The creative process is the synthesis of knowledge and skills . . . It’s about creating an environment where the synthesis occurs” (Kasumi). For Kasumi, the best context for this environment is the studio setting, where classes are small, and the workspace is an open environment allowing for opportune interaction, critique and learning. Ideally for Kasumi, design project work would be spread over periods longer than a semester. The arrangement for her postgraduate students comes closest

to this. Classes are kept small and students work closely with industry professionals, completing a design brief for a real client. Large class sizes, and the available physical accommodation do not allow for this arrangement with the undergraduates. One of the students interviewed yearned after a studio culture and environment as she said this would be a more engaging environment than the present set up.

6.4.4 Assessment

In Kasumi's 200-level unit the assessment is based around a brief: students must respond by finding a specific problem that needs a solution and then designing a prototype that demonstrates a solution. "It's called a brief for a good reason," Kasumi says, and "it's more than they will get out in industry". Each step in the assessment leads to the final prototype as the assessment is holistic and integrated, and there is constructive alignment (Biggs & Tang, 2009) of unit outcomes, tasks and assessments. The learning design documented here (see Figure 6.3) is a representation of the early steps required to complete the brief over the semester, and represents three major elements that students must demonstrate: process, documentation and articulation (communication). The assessments are individual, but as with the creative writing (case 1), students share and welcome feedback from peers in order to improve their creative output and check audience response.

The brief is broken into two assignments. For assignment 1, worth 40%, students create three posters (one due in week 3 and two in week 6). This allows students to receive early feedback from the tutor and peers on their initial research and proof of concept. The posters are displayed in the classroom and critiqued in an open forum, then marked by the tutors. The proof of concept poster must communicate the scope of the project and demonstrate that the project is "realistic, focused and possible". Use-case scenarios, sample screen designs and layout diagrams are required to communicate the ideas and show evidence of research. The student's proposal must address something for which there is a need, and not something that already exists. So by week 6, half way through semester, students will have provided evidence of a well-formed idea and shown that they understand the user's context. Through case study research they provide substantial support for their concept, and demonstrate that they understand and can communicate the core values and vision of their project. In addition, using wireframes (schematic

visual representations of a website), and mockups (scaled or full-sized models), they demonstrate a capacity to complete the project.

The second assignment, worth 60%, is a final website that the students create to present their revised concept, justify the features of the project, and link to the final prototype (another website). These two final creative products, demonstrating creative design, underpinned by an in-depth technical knowledge (HTML and CSS) are shared with class members via accompanying posters and a project URL that is submitted to Blackboard (the LMS). The whole process of assessment takes students through the design cycle, from investigating and finding a problem, defining the problem, generating possible solutions (ideation), designing solutions and final prototyping in order to evaluate and test the solutions. (The students do not go to the final stage of user testing in this unit.) Continual research underpins the process.

Kasumi's criteria for judging the two assessments include the student's response to the brief, resolution of the concept, evidence of technical proficiency, appropriate use of interface design principles and standard of presentation and communication. Although she currently does not use a rubric she knows she will soon have to introduce one due to university requirements. However, this presents her with problems as the bluntness of a rubric in her mind makes it difficult to fairly and effectively assess students' creativity. It is still about value judgements.

6.4.5 The Impact of Context, ICTs and Delivery Mode

Kasumi's view on the role of ICTs in this context is that "the technology part is procedural, the building of ideas is not". The point is that there are procedural steps to using the technology. These steps can be learnt and followed in sequence, but leaning how to be creative (in her words, to be energised, explore, see the world in a different way, connect and construct concepts) is non-linear. So from this point of view technology should be easier for students to learn than "being creative"; but Kasumi says that that is not how students see it. It was Kasumi's tutors who pointed out that skills learnt in this unit quickly become redundant: coding and markup language that worked in a browser six months ago may no longer render images accurately today. So students need to take more than knowledge of current software and coding systems away with them; creative skills and design principles, the ability to research and evaluate, approaches to tool manipulation, knowledge of human-

computer interaction, and communication skills will have a longer half-life and persistence. New technologies have their rewards and downsides: “The technology is as wonderful as it is horrifying,” Kasumi says. But as one of the tutors explained, having the courage to try, and to fail, and fail again with the technology pays dividends, and students who do this, do better:

> Whether that’s because they have just got more aptitude initially–that’s probably some of it . . . I think that’s hard to communicate until they have actually got some experience . . . trying something and failing at it. And [understanding] that failing is good . . . *letting* them do that, then the final product is invariably so much better. (Sam)

In this unit, students are required to access Blackboard (the LMS) as the communication hub for their studies. In addition, housed outside the LMS, the lead tutor, Sam, records his weekly in-class demonstrations as screencasts on a blog: “Sam’s blog” is an important knowledge base. Students are also encouraged to keep their own blogs on Tumblr (tumblr.com) where they can easily record concept development, reflect on process and comment on other’s ideas. One of the tutors pointed out that the advantage of Tumblrs is that they are current technology, popular with students, and students can dump thoughts there without fear of assessment. The tutors know when students use these as last minute efforts to document process rather than as a more regular and consistent effort, as not only are the entries date stamped, but there is a difference in how students talk about concepts as they generate ideas, compared to perceptions communicated in hindsight. The blogs were once included in the assessment, but time pressure and class size now mean that the blogs are optional formative exercises, which not all students do. However, as the tutors observe, those students who keep a journal, maintain a blog, or use conceptual tools such as mind maps (digital or analogue) produce better work overall.

While clearly revelling in new technologies, Kasumi still stresses the usefulness of non-digital tools, pen and paper, for sketching, storyboarding, researching concepts and prototyping. These analogue technologies are listed in the unit overview as requirements. The blogs, the pen and paper sketching, the development of wireframes and mockups are all means of rapid prototyping, getting ideas out there, making space for testing, communicating and receiving feedback

from peers and others in the field. “Design *is* research,” Kasumi says. It is active and purposeful.

The impact of technology on the students in this case study is profound; as they shape the technology to build something new (e.g. a website or a smartphone app), it is shaping them and the world around them. The following definition of the integrative work of an interaction designer was provided in the unit overview:

> It is the job of the interaction designer to build a system of positive relationships between people and the technological devices they use . . . The goal is to create a system whereby people and technological devices can communicate with each other just as naturally as or even more efficiently than people communicate with each other. (Interaction Design, 2011)

6.4.6 Tutors’ Perspective

As well as references in the discussion above to tutors’ views, the tutors made some interesting observations about where learning can happen. They argued that it is not just at university. The value of university for one of the tutors (Sam) was, as he saw it, from his experience a few years ago, being in a community, “an Andy Warhol factory-like space . . .where your ideas are butting up against others and you’re in a community of creative people”. The best moment of the interview, however, was when I asked the question: “Why do you want the students to be creative?”. After a few moments of shocked and stunned silence (as if caught in the glare of headlights), the tutors recovered, and said: “Isn’t that what they’re here for?”. It seemed that creativity was assumed: tacit, but assumed. “I’d be questioning why they were doing the unit if they didn’t want to be creative”, and, “if you’re not creative you’re out of a job”. Similarly, “What is creativity?” was perceived as a big question, but soon the tutors started to analyse it, saying it was not linear, and that students have to come to terms with it not being about *being original* because so much has gone before.

6.4.7 Student Responses

The students interviewed for case 2 confirmed that the lectures were “brilliant” and that Kasumi was motivating, urging them on to find their own space in the world of interaction design. Certainly students seemed engaged during lectures

although there was the usual amount of interaction with mobile devices and laptops, but whether this was fact checking, context related texting, note taking or unrelated activity could not be judged without specific targeted research, which is beyond the scope of this investigation. In the lecture, Kasumi's enthusiasm, her examples and demonstrations were all clearly valued by students, but it also prompted a feeling of being overwhelmed for some students, who said they went away thinking, "Well, it has all been done before, what can I do that is different?". Presumably students do manage to work through these feelings, as they did present evidence of concept development and ultimately a prototype at the end of semester. Kasumi observed that "students hate me while it's hard, while they're doing it, and love me when it's overcome".

As Kasumi predicted, the students thought the technical tutorials in the laboratories were difficult, and students felt that even though they were seated together in tutorials there was a lack of community, as much of the work was individually based, and students came and went without necessarily knowing others in their tutorial by name. These issues around group work and community are taken up further in chapter 7.

6.4.8 Learning Design Case 2: Problem Finding to Proof of Concept

The learning design represented in Figure 6.3 identifies the steps for creating a project brief from the first stage of problem finding to proof of concept (i.e. "first draft" stage). The brief is to design and develop a web interface that intervenes in and improves a specific human experience. Students are required to find a problem, develop a solution, and demonstrate this through a series of posters. The first poster is presented in week 3, and the other two posters in week 6. Peer review and discussion are integral to the poster exhibition sessions. The three main tasks are presented in the left hand column and a selection of related creative processes on the right. The cluster of creative processes for each step shows the importance of recognising iterative processes in the learning design. Tutors support process throughout, and the involvement of peers to discuss and reflect on outcomes at each stage of the process (stages 1, 2 and 3) replicates the experience expected in industry where the web designer would regularly seek feedback from the client as the project progresses, in order to gauge appropriateness and value of the design and product.

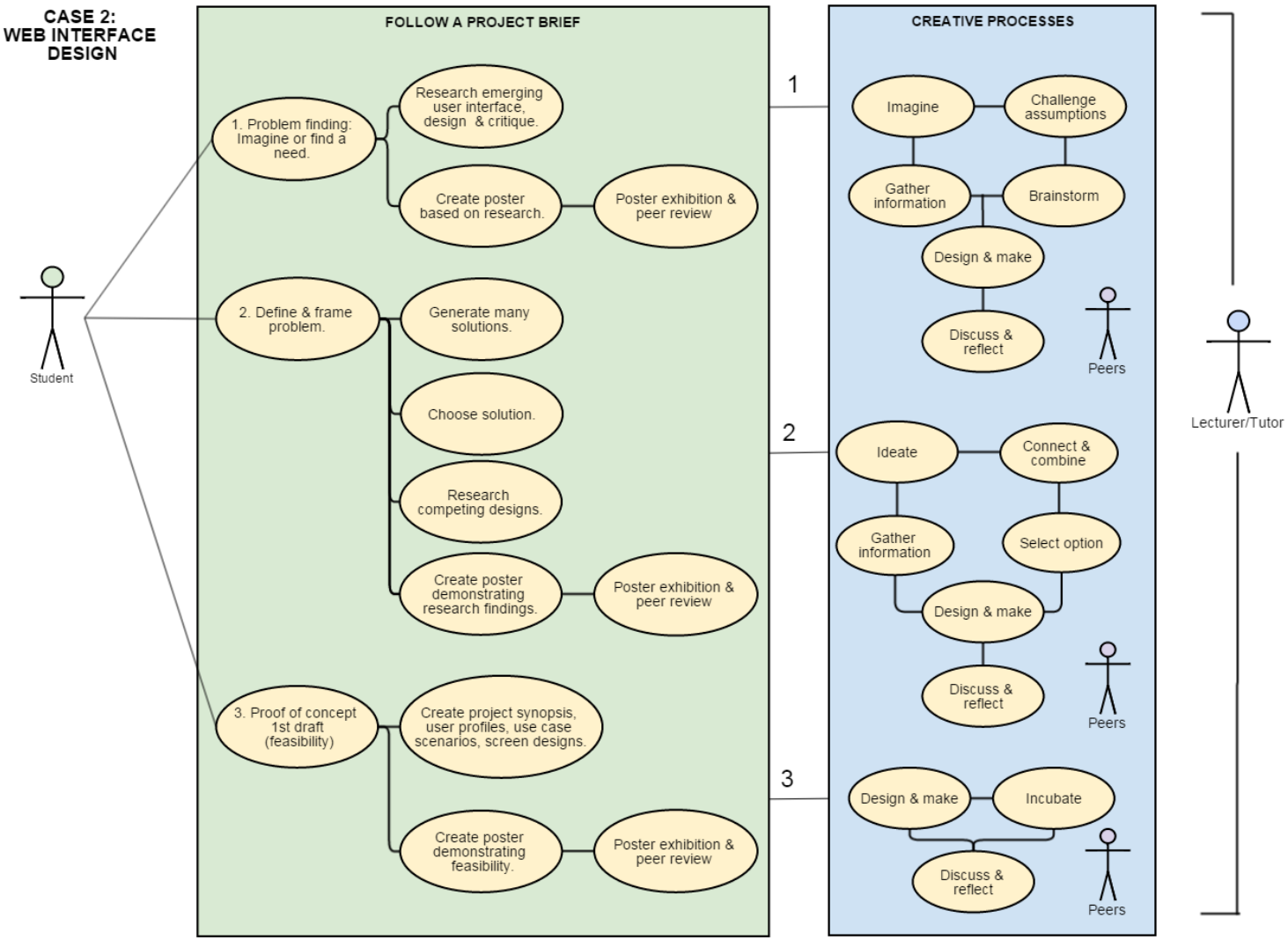

Figure 6.3. Learning design case 2–problem finding to proof of concept.

6.5 CASE STUDY 3: SOCIETY AND CULTURE

6.5.1 Background

Alex coordinates and lectures on a large 100-level unit in society and culture at a multi-campus, metropolitan university. He is a professor of sociology and researches social justice and the effects of globalisation. Before entering academia he was a merchant banker, but during travels in South America an incident awakened him to the issues of globalisation, and this *peripeteia* marked a turning point in his life. He now encourages his students to be actively engaged citizens like himself, with an awareness of issues of equality. He consciously works for change in the world, supports human-rights organisations, and sees education as an important part of the awareness raising and change process. He has won numerous teaching awards from his own university and a national teaching award.

Alex has a small army of tutors who help him with the diverse student cohort. Students number in excess of 1100 individuals and are spread across two campuses. The unit is offered on campus, in blended learning mode, and is core for arts degree students, but an elective for students from outside the faculty. Student disciplinary backgrounds are therefore diverse (e.g. education, engineering, nursing, law, social science), students are often the first in their family to attend university, and representative of the cultural diversity of modern Australia. For this case study I interviewed two lead tutors (1 female, 1 male), and 11 students in two group interviews (6 males, 5 females).

6.5.2 Finding Creativity: Empowering Students to Develop Vision and Voice

As Alex's unit is compulsory for the majority of students in the class, he works hard to bring the subject matter alive and focus student attention. He is a master storyteller, providing clear explanations and well-illustrated examples, and his mantra for teaching is to introduce, teach, and reinforce. He does this with a lightness and humour that draws on his own personal experience. He says of academia: "Our challenge is to provide a really exciting, intellectually challenging, creative, relevant and fun atmosphere. And these are words that are not often used in academia. Fun. And it is fun". He observes that some academics describe lecturing as a conflict or battle zone, and while he agrees there are challenges, there are also privileges and rewards.

In answer to the question about whether or not he asks students to be creative, Alex commented, “I don’t know if I use the word creative, specifically, because I think sometimes when you tell someone to think creatively, it’s like putting a deer in headlights”, that is, they are too stunned by the question to be able to respond constructively (or creatively). Within this context, Alex sees creativity as an experimental, evolving process:

> [Creativity] has to be organic . . . if you kind of provide those frameworks for people to think, and *encourage* them to think, and then be brave enough to get it wrong, and admit when you get it wrong, and *tell* them that, then they’re more likely to experiment in that way. And I think creativity follows. (Alex)

Alex challenges his students to think creatively around broad social issues, focusing their attention on culture and language. To do this he uses “tools”, theory and the concept of agency, to help them find meaning. For example, in one lecture he began the session by breaking down the stereotype of teacher and student: before the lecture commenced he sat down beside a student, chatting casually, disturbing the usual transactional distance (Moore, 1980, 2009) between student and lecturer in that context. He believes that change happens by looking with fresh eyes at traditional power relationships. It does not have to be on a grand scale; small change at the local level is significant. “I really do believe that education can be one of those things that can confront entrenched power relationships”, and as a teacher he is in a position to make change: “We can shine a spotlight on those power relationships . . . there are very few opportunities that people get a chance to do that”. This is his way of empowering students, which he sees as a means of being creative with learning. He wants them to know that decisions they make on a daily basis can creatively shape, construct and influence society. For example Alex challenged students to think afresh about the act of buying a bar of chocolate. Using the power of storytelling he slowly uncovered evidence about the social and economic conditions under which cocoa is farmed and traded. He engaged the students and gave them conceptual tools that they could creatively employ to reflect on the choices they made the next time they bought chocolate.

Because Alex is aware of the needs of his student cohort, he does not begin the learning with academic texts or the theorists. Instead, he goes from case study to theory, “providing an appetite for that theoretical intervention” (Alex). He believes

they need to be shown the relevance of the subject matter and the tools of critique, including the theorists, to be motivated to learn:

> I have students who work thirty-five-hour weeks. They don't have the luxury, unfortunately, to sit around and plough through that stuff. They will do it, but first they need to know it's worth doing . . . So I'm not saying you don't use those tools, I'm saying those tools need to be contextualised–under the right conditions and in the right time. (Alex)

Alex wants students to read Foucault because Foucault explains why certain power relationships affect their lives: not because it is set on the syllabus. So he grounds his theory in the real world, uses contemporary examples such as last night's news bulletin on race riots, or Monday's twitter feed on economic sustainability to make global issues relevant to students' lives. He is constantly thinking about new ways to engage students to think creatively using multiple media and methods; for example he will use a beer commercial from YouTube to challenge students' concepts of cultural and gender stereotypes. At the same time he encourages creative high-level critique and analysis, naturally weaving in the theorists, moving from the particular to the general, making learning accessible.

Alex's analogy for accessible learning is Rubik's cube. He sees knowledge as about pattern making, and those patterns are not only in text books, in lecturer's words, or on the Internet: "They are everywhere, including in you [the student]" (Alex).

> So I'm handing them the Rubik's Cube and I say, okay, here's how you make a pattern using a Rubik's Cube, this is the theory and this the ideas. Now, what other patterns can you make? How else do you interpret that? (Alex)

So Alex believes he is teaching students how to play with the Rubik's Cube, to play with ideas. What is important is "not actually telling them that's what you're doing", because then students go, "I need to concentrate . . . and as soon as you do that, it becomes harder" (Alex).

Consequently, in Alex's classes learning is a participatory rather than passive activity. He is looking for what Freire calls "committed involvement", not "pseudo-participation" (Freire, 2000, p. 69). Alex is creatively helping students to develop their own voice and vision (Welkener, 2004). In support of that Alex demonstrates a

reciprocal approach to the relationship between teacher and student, where teachers and students share knowledge and meaning making as equal partners, working together (Freire, 2000). By passionately modelling scholarly, professional and creative energies through his lectures, and his mediated presence on the unit website, he demonstrates that even academics do not conform to stereotypes, and that there are multiple ways of interpreting and being in the world. In doing this he is encouraging development of the whole person.

Alex's creative "teaching presence" (Vaughan, Cleveland-Innes, & Garrison, 2013) is a significant aspect of his approach to teaching in both the online and offline environments. Whether he is in an overly large lecture theatre the size of a small stadium trying to reach the student in the front row as well as the distracted group at the back, or on the Blackboard website doing his weekly vodcast, his hand in the "design, facilitation and direction of cognitive and social processes" leading to "meaningful" and "educationally worthwhile learning" (Vaughan et al., 2013, p. 2) cannot be missed. In lectures he prompts students to embody ideas under discussion by urging them to get up out of their seats. He then directs one half of the huge class to clap the first rhythm pattern, then directs the other half of the class to clap a different pattern. He then asks them to clap their different rhythms simultaneously, and to listen to the new pattern that emerges, and to think about what that symbolises. His sense of fun, play and theatre, his appeal to the emotions and the senses all produce an energy in the classroom that is difficult to ignore. Some students resist participation, but find it difficult to remain disinterested. Alex's comment about the creative energy required for teaching is that, "you've got to put a lot of energy into that thing–it's like getting a story that's going to speak to them".

6.5.3 Supporting the Creative Learning Context

Recognising the difficulties most first-year students have transitioning to the complexity of university life and study, Alex scaffolds the development of sociological thinking via the online environment as carefully as he does in the face-to-face space. Alex's thinking is that students who find a reasonable level of comfort in their new learning environment will be able to devote more time to the content and less time stressing about the process or feeling demotivated as they struggle with the complexities of adapting to academic life and the institution. The framework for social inquiry via the Blackboard site is therefore creatively structured to maximise

student engagement and reach the large student cohort (see learning design, Figure 6.4). The required attendance time per week for students is only one hour each for lectures and tutorials. The remaining time is theoretically spent following the guided tasks as set out on the website. A proportion of students can elect to view all their lectures online rather than attending a face-to-face lecture, so some only have one hour of contact with tutors per week. Alex's content and online activities are therefore key to modelling sociological thinking and meaningfully engaging students. He has four goals:

> One of the goals is to teach them sociological thinking. Another goal is to think about academic writing. The other goal is to aim for retention, for *them* to think about retention . . . so students don't drop out. And the other goal is to make knowledge something that's accessible, almost like a Rubik's Cube. (Alex)

The weekly tasks outlined on the website usually begin with a trigger video clip of Alex introducing the topic. Using funny props, speaking directly to camera and using a conversational tone, Alex records the vodcast, which is then posted to YouTube and linked via Blackboard. The recording might be shot in his office at the university, or in the university grounds where Alex appears in a crazy costume talking about constructions of society. Alternatively, he might parody wildlife documentary film-making techniques, and venture into the field making hushed observations about society, race, gender and institutional power. All this *playing* as an entree to learning is a means by which Russ (2003) says divergent thinking can be fostered. It helps encourage insight, engagement, motivation, persistence and problem solving. While Russ's research relates to young children, his arguments are relevant in reflecting on Alex's creative teaching with adults.

6.5.4 Claiming Students' Attention Beyond the Classroom

In listening to Alex's comments and those of his tutors, it is clear that the teaching team work actively to claim students' attention beyond the classroom. This is not just about performing memorably for students; it is about engaging students meaningfully with the issues so that they creatively make their own connections, which stick and persist and leave them with a sense of agency. One of the tutors (Diane) talked about creating "an organism" or "an ecology", that goes beyond the class hour. There is much noise and distraction out there so the question is how to

use limited class time. In Alex's estimation, focussing on information is the wrong strategy, as there is an abundance of information on the Internet. What is lacking is thinking individuals who have "a sense of active citizenship" (Alex), and Alex believes teachers can help build that capacity.

6.5.5 Assessment

The assessment for this unit is a standard social science approach, and includes three pieces: a summary and review of an article (20%), an essay (40%), and an in-class end of semester examination (40%). The focus of assessment is on learning social science conventions and (creatively) engaging with the assignment questions so that students are motivated to persist with their learning. The creativity comes in students creatively combining theory with practical examples and their own research. It is implicit rather than explicit as students engage in analysis and socio-cultural critique. Alex argues that while he does not ask students to "be creative", "I constantly get my students to think creatively through the in-class exercises, the out-of-class exercises, and the assignment questions".

6.5.6 The Impact of Context, ICTs and Delivery mode

As indicated above, ICTs and the Blackboard delivery platform are key for Alex to manage his large classes and maintain his creative teaching approach in a blended learning environment. "If I had a class of 15 students I could do it face-to-face, but I don't, I have a class of 1168." The technology supports the processes of dissemination, sharing ideas (a small number of students engage with the discussion board, but mostly it serves a Q & A function for a limited number of students), and for keeping students on track. Alex argues that these technologies also allow him to manage the processes around understanding theory, which for students are theoretically dense. It gives him more tools to help them revise and revisit concepts.

However, the technology needs to be integrated with the pedagogical approach: "It has to be a robust, integrated, holistic approach" (Alex). He acknowledges the dichotomy of responses from fellow academics who say either, "let's use it for everything" or "technology ruins everything". He sees that a strong pedagogical framework is what matters, and that as teachers we should be asking how we can use the new technologies to our advantage, not just complain that they are there.

Alex believes that students are not as technologically savvy as we think, but they do know how to use technology to communicate–so he capitalises on that. He is comfortable with social media himself, and uses it to comment on contemporary issues via his blog, Twitter and other media where his commentary is invited. So it is not difficult for him to incorporate social media into his lectures. This is also in keeping with one of the unit learning outcomes: "to engage critically with media and visual culture". He has set up a private Facebook page for the class and as an in-class activity he invites students to respond via that page to the question, "I think globalisation is . . ." He gives them about three minutes to comment. Using communications technologies that are relevant to the students he shows how powerful these tools can be in quickly gathering opinion, and at what level that opinion is expressed. Again, this is done in a naturalistic way. He is not instructing students about social media, but inviting them to critique it as they use it. At the time of classroom observation, iPads had been supplied to all new first-year students at Alex's university, so he knew his students would have access to tablets, a mobile phone, or a laptop for the Facebooking exercise.

6.5.7 Tutors' Perspective

The two lead tutors I interviewed see their teaching as a creative activity. They take a personal interest in the students, and in their own way follow Alex's pedagogical lead, if not his personal teaching style. Both actively search for new illustrative examples each week from real life to create a bridge between theory and practice. While commuting to the university via public transport one of the tutors (Diane) engages in informal social research, observing and thinking about the society and culture around her, creatively working out ways to make her tutorials more engaging. "Primarily, I want to engage them in what we're talking about . . . to make it visibly real", and "what we're trying to impart is really a new way of trying to be in the world" (Diane). During our conversation, Diane also conceived of creativity in terms of creation and generation, as "creating seeds of awareness" and "seeds of analysis" that "emerge spontaneously", "creating a new type of citizen" and "creating a comfortable environment" for sharing in tutorials. All this could be called creative engagement. She also talked about the creative energy it takes to come up with new ideas and examples for tutorials. The other tutor, Peter, also commented

that as they only have one hour with students, their time to be creative with them is limited given the goals that they are asked to achieve as tutors.

6.5.8 Student Responses

The two group interviews with students confirmed that students thought Alex's storytelling approach to theory was memorable and held their attention. One student said, "I think often with what Alex does, I come out of a lecture more interested in the subject, and then I look at it and I read and remember everything he's put there". One of them said, "You have to get up and participate in his classes", to which the other students laughed knowingly. The students also confirmed the efficacy of Alex's pedagogical approach and the value of the steps on the Blackboard site. One male student commented that, "if it wasn't for Alex, I wouldn't be there. Alex has a full lecture hall at 8am and none of the others have that", meaning that other lecturers have trouble holding students interest by week 10 or 11, the week in which I conducted student interviews. Alex's approach seemed to be working, as this student comment about agency, ownership of ideas and building on Rubik's-cube-like patterns indicates:

> So you as the student have less work to do to get started on a topic. I think he grasps the simplicity of it. And then your creativity is that you're given the base and you can just build what you want on top of it. (FG2SC)

6.5.9 Learning Design case 3: Scaffolded Creative Inquiry

The following learning design (Figure 6.4) represents the framework Alex uses to engage students in creative social and cultural inquiry. His pattern for social inquiry in this unit is one which they can adapt for other units in their degree and other areas of their lives. The example is a generic pattern, and the timeframe is over one week, which represents about 10 hours of student study time. The steps outlined on the Blackboard website (the LMS) are listed in the left hand column and the likely creative processes in the right hand column. The creativity comes in the approach to tasks themselves, the facilitation and the leadership of the unit by the coordinator and tutors. Engagement with peers occurs during the lectures and the tutorials. See Appendix I for a text-based version of this learning design.

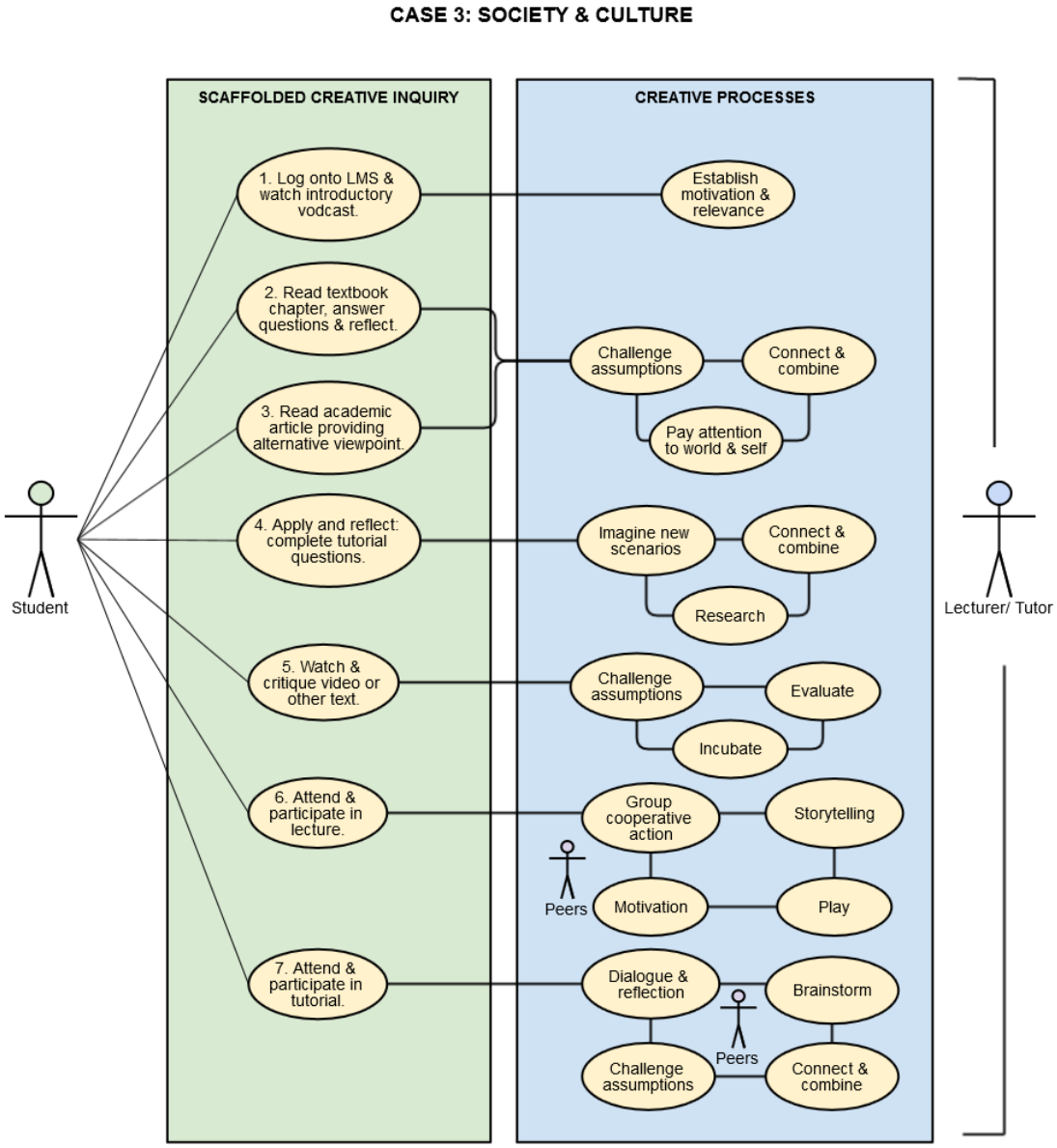

Figure 6.4. Learning design case 3–scaffolded creative inquiry.

6.6 CASE STUDY 4: DIGITAL IMAGING

6.6.1 Background

Leo is a lecturer in multimedia at a multi-campus, metropolitan university. His university has a strong focus on creative graduate outcomes and these are stated explicitly under the heading “innovation” on the university website. He coordinates a 100-level unit in digital imaging and manages over 1000 students over the academic year in this fully online unit. He also lectures on other elective units–web animation and computer games. These units are all designed to “bring people into creative practice via software” (Leo). The software for this unit is the image-editing software, Photoshop. The elective that is the focus of this case study attracts students broadly from across the university (e.g. from visual arts, media, the humanities, biology, engineering, nursing and accounting). Digital Imaging is offered to undergraduates in the two main university semesters and to OUA students (typically a mature age cohort) four times a year.

Leo’s approach to creativity and teaching is supported by years of industry experience as a commercial artist, illustrator, screen printer, graphic designer and multimedia developer. He has won national and international awards for his professional and artistic work, he regularly exhibits his art, and recently completed a PhD focusing on creativity and computer generated art. He has taught in higher education for about 20 years, and students and tutors with whom I spoke attest to his effective and creative approach to learning and teaching, and the educational design of the online unit. Like Anna (case 1), he takes a scholarly interest in creativity. He has reflected deeply about the issues of creativity from a cognitive science and visual arts perspective, and in relation to online teaching.

Leo discovered graphics software in the early days of the evolution of Apple computing, and “it was like a new kind of *world* just opened up in front of me and exploded the potential of it”. For his own current creative work Leo works with computer-generated images created in the first instance using macros (computer instructions to automate patterns). In other words, he uses algorithms as a starting point for his photographic art. He moved into this area of artistic expression at a time when three simultaneous constraints focused the direction of his creativity: full-time employment in academia, PhD candidature, and parenting of three small children.

Being time-poor, but a passionate artist, he chose to automate the early stage of his image-making process. For example, using unusual and unlikely combinations of objects, such as mouldy lettuce, crab claws and tripe, he set the software to automatically generate hundreds of incrementally different original patterns, and from the new composite images selected items for further manual development with digital tools such as Adobe After Effects and Photoshop. Pushing the boundaries of art and technology in this way, turning random objects into face shapes or mythical creatures via programmed computer rules provoked a paradigm shift in the way he works. He "really had to work out what had been lost and what had been gained" (Leo) in this new creative process.

In addition to conversations with Leo, I interviewed three of his tutors (2 male, 1 female). They are practicing artists or working in industry-related fields, and one is artist in residence at a scientific installation. Four students who came from architecture, engineering, advertising, and media and communications were also interviewed (2 male, 2 female). All students were enrolled as fully online distance (external) students, and were either enrolled in another online unit, and/or simultaneously enrolled in one or more on-campus (internal) units. Although the unit was a 100-level unit, all interviewed students (as it happened) were in the final or near-final semester of their degree, so were able to provide some perspective on this experience in comparison with their other studies.

6.6.2 Visualising and Crash Tackling Creativity

In the teaching context, Leo approaches the notion of creativity head on. He argues that he is teaching students how to make creative decisions, how to communicate *why* they make those decisions, and to employ tools and conceptual frameworks to make those decisions. Because the student cohort he teaches is so diverse, however, some come with little familiarity about the creative process, and quite often "have no fundamental understanding of the pedagogy of a creative-based course", and "we have to start our courses from that kind of very base level" (Leo).[23] He further observes: "It's my job as a teacher to demystify all this stuff [creativity]". At the same time he says, "I have to sort of protect the magic, because there *is* some

[23] As with case 2, the characteristics of the cohort have changed over the last ten years and students are no longer required to have a background in fine arts before entering the unit.

magic in it". So in unveiling what creativity is or is not, he has to debunk the myth of the starving artist doing art for art's sake, because "it is a disservice held in place by gatekeepers, and stops the less talented from going ahead", and "cuts them off from being art makers". Clearly Leo sees a place for second generation creativity; it is not just the preserve of highly gifted, first generation creatives.

6.6.3 Teaching and Playing with Creativity

Students in this context are specifically asked to be creative and the unit explicitly talks about creativity. Leo does not shy away from the concept. When I asked Leo if he thought creativity could be taught, his response was, "Yes. I'd be out of a job if I didn't/couldn't . . . Can it always be taught to everybody? Well, that's a different question". Leo sees a distinction between talent and an acquired skill.

> They've either got an aptitude or not. But I do believe in plasticity of the mind. You can re change your mind to be better at something. I think creativity is over complicated. It's a lot simpler than a lot of people think. (Leo)

Leo helps the students learn creative strategies and creative decision-making, which, he says, a creative person already knows, but which novices need to be taught. This includes divergent and convergent thinking, the need for multiple iterations of early ideas and images, using the software as a digital sandpit for play, and learning when creative decisions have to be made. You have to teach students that there are two important parts to creativity: "there's a time for unfocused play, but then there's another time for focused work as well" (Leo). For example, in the first week Leo sets students a simple Photoshop task that gives them immediate feedback as they play with the software. There is no need for advanced skills as the task gives them "tangible results straight away" (Leo). It is similar to Anna's first exercise (case 1) in the creative writing lecture, in that students immediately get in and do something creative without being overwhelmed by the idea that they are "being creative", or being judged. After two hours of independent play with the software, Leo's students have gained confidence and skills, had some small successes, and are potentially motivated to continue learning and making, thus "avoiding analysis paralysis" (Leo). For Leo it is important that students explore *productively* within time limits and boundaries, to develop speed and flexibility.

Students need to learn how to set up their own generative space; that is, a space where they become immersed in playing and creating.

6.6.4 Assessment: Constraints for Fostering Creativity

Assessment of creativity in this unit does not seem to be as problematic for staff or students as I had expected. Because Leo has designed the unit so that expectations and criteria around creativity are clearly articulated and explained, likely problems have been anticipated. He talks students through known issues with creative process and the assessment criteria. “We’re saying quite explicitly we’re looking for evidence of creative exploration. We want you to try something really different, and make it work.” He gives marks for “creative bravery”, and will mark an “ambitious failure” higher than a “safe success”, “because that’s the criteria we’re setting”. It does not matter if students agree or disagree with the definitions and criteria set, but they know clearly on what basis creativity and technical skill will be judged. Leo is quite firm on this, and it makes a workable solution to the thorny problem of assessment. He tells the students:

> We’re not going to enter into this level of debate about whether art can be taught or what art is. We’re setting up a little self-contained value system here that you work within, and that way we can assess you. Now, whether you agree with it or not is irrelevant for the purposes of this exercise: it’s an exercise. (Leo)

This explicit articulation of assessment requirements and goals is especially important within a wholly asynchronous online environment where opportunities for clarification are reduced. It is particularly difficult as they are aiming to teach skills and theory through practical application, and also help students understand cultural ideas of representation.

Leo believes that creativity comes from the constraints. It is not unbounded. Because of students’ broad disciplinary backgrounds the teachers need to be able to address the concerns of arts and science students. The arts students will want to dispute what creativity is, and the science students will say:

> This is illogical: where’s the empirical evidence for this? . . . and we have to be able to justify what we’re doing, even more so than if you were in an art class

with art students . . . that's why we focus on these kind of well-defined boundary tasks. (Leo)

Further constraints come from the university as it permits no more than three assignments per semester, and even though Leo knows that students want continuous feedback this is not possible within the context. So there are three assignments spread over the semester: two digital images worth 25% each, and one major project (worth 50%) that includes a final image and a conceptual, developmental journal submitted as an electronic file (PDF). The assessment criteria for each of these assignments are: (1) compliance with the specifications of a visual design brief, (2) technical proficiency, and (3) creative proficiency and evidence of visual experimentation. The aim of the conceptual journal, as described in the assessment details, is to demonstrate the ability to "form and follow a goal-orientated creative process". The journal promotes active reflection and is meant to demonstrate the student's steps in reaching a creative outcome, and the ability to communicate and share ideas with an audience in a manner suited to participation in a creative community, whether that is, for example, working as a professional within the creative industries or as an artist preparing for a gallery exhibit. Leo argues that the ideas behind the product are as important as the output.

6.6.5 The Impact of Context, ICTs and Delivery Mode

Leo spoke about the powerful impact digital technologies have had over recent decades on the making of art, particularly on photography and multimedia. He sees that these technologies can support students' creativity, but they cannot make up for a lack of understanding of the creative process.

> Well, first off, it makes it possible for a lot of people to be creative. In the past, pre digital tools, analogue tools, it took years of manual training to gain any kind of foothold before you could be creative, just to be able to manually employ tools. And even cameras . . . learning the science of f-stops and exposures and everything: it took a huge commitment. Also the cost of that equipment was prohibitive. So digital technologies have democratised that aspect of expertise and the infrastructure. So in that way it's allowed people halfway up the mountain. But then of course there's a stop. It can't get you any further. (Leo)

So although the boundaries between amateur and professional are blurring, Leo argues that digital technologies are no replacement for developing a well-trained eye to create and "sell" visual illusions. The perception "that the software will magically do everything for you" needs to be dispelled. "The ideas aren't in the technology themselves" (Leo). He compares it to writing with a word processor: the software aids the writing process but does not create the words in the first place or spontaneously produce a novel.

As the Photoshop unit is offered fully online, there are no face-to-face sessions, and all the tutorials are presented as pre-recorded videos. Leo maintains that while there are many Photoshop tutorials out there, including on Lynda.com[24], he has a difference of approach to the commercial companies: "That's not what we do. We teach people creativity using software. There's a big difference". He also believes they are teaching students how to manage the complexity of Photoshop by learning the visual, and "understanding how your eyes work". "Forget about the software"; it is only a means to an end.

However, the software does influence the production and direction of ideas, and imposes its own constraints. Leo argues that you can build organically on the computer, but it is easier to follow a linear trail, and students need to be taught to move sideways as well. Similarly, sketching does not work the same way on a computer as with paper and pen.

> Trying to recreate that nervous energy of the sketchpad on a computer is very hard . . . It's not so much the technique of sketching; it's that idea of putting together little vignettes of images, quickly, at speed. (Leo)

One of the other problems with a software package like Photoshop is that it has so many capabilities, that students can spend far too much time going through the menus without *making* something. An exploration of the interfaces is not necessarily *productive* exploration.

As the online environment mediates the whole context for creativity and learning in this unit, it has an impact on students and staff. Leo and his tutors are dealing with large numbers of students and the workload formula, based on the face-

[24] Lynda.com offers online tutorials in, e.g. software and design skills. Leo's students have access to these tutorials if they choose.

to-face model, leaves six minutes per student, per week, for individual attention, including marking. From this it is obvious that there are insufficient resources to give individual feedback to each student every week. “That’s just the economics of it,” says Leo, who is always creatively pragmatic. Consequently, supportive qualitative feedback is provided via an automated marking tool with a bank of comments that tutors can adjust and annotate. This is used in a sophisticated manner and students’ comments indicate that the system Leo has devised gives detailed, refined and well-tailored feedback. Leo also says that the marking processes are “transparent, replicable and sharable” amongst all the tutors.

The cornerstone of the online delivery is the LMS, Blackboard, with which Leo is comfortable. “Blackboard is fine, I know how to use it. The students know how to use it. It’s just an interface.” According to Leo what is important is the educational design of the unit, the way you communicate with students, and the feedback you give and arrange. The discussion board helps somewhat with feedback and sharing processes, as students are encouraged to share their work online with peers from the outset: “Having to show their work and talk about it is great, that’s fantastic, and they learn a lot that way”. Students may also sort out each other’s problems on the discussion board before asking the teacher, which saves the teaching team time. Leo is not a “fan of group work”, however, and says that the average creative person works alone, or they are directing a team. Students in this unit work independently, and do not have to engage with other students if they choose not to do so. However, as in case 1 (creative writing), the OUA students form strong bonds and “have a huge amount of interaction”. They are a different cohort and differently motivated.

Of the four students interviewed none used the discussion board much for sharing, except perhaps in the first few weeks. This was not seen as a problem. As one engineering student explained, while he would check with peers about assignment requirements, those conversations would take place in on-campus classes whilst attending other unit tutorials or lectures. Although Leo does not think that “creativity is always a group sport”, he does believe there is still a social side to creativity. “It’s the social dynamic of it, the pay off, that’s important”, meaning when you show someone your work, explain your ideas, reveal what you have been making to an audience, you receive a response and feedback on your creativity.

6.5.6 Tutors' Perspective

Tutors and students gave Leo's creative design of the unit a positive response. One tutor characterised the design as "hiding the technical in the creative" (Michael), such that a very technical unit was made fun. Importantly, as students were allowed to express themselves, it gave them "something of their own making" (Michael) over which they had ownership. The design was also regarded as sustainable, because even if Photoshop disappeared, the unit could, with some small amendments, still be taught around a different piece of software, and the general theory would still be applicable. In addition, the design was sufficiently robust that it allowed two of the tutors to continue to tutor on the unit whilst travelling overseas. "As long as your network works, you can do anything" (Michael).

On the question of whether or not you can teach creativity, the tutors provided a more qualified response compared with Leo's. They would say "yes . . . but", and follow up with "it can be developed", or "you can teach students to think more laterally", or "if they don't have that creative flair it's very difficult to bring it out", or "can you teach students to think for themselves?". All tutors acknowledged the importance of motivation in regard to creativity, and the need for students to be *open* to a more creative way of thinking. This is especially so when studying online, as there is much reading to get through and they have to be self-motivated to follow the tutorials week by week, even though the tutors are always thinking of ways to keep students on track. "The online thing is not suited to everyone . . . there are different types of students" (Marie). Initially Marie thought that the online environment did not make teaching creativity any harder, simply because "it is difficult to teach creativity" anyway. However, on reflection she qualified this saying that because of the lack of opportunity to work one-on-one with students, and to show and discuss examples from books with them, online learning was challenging, but "we can think of other ways to do that". In addition, the power of using other students' work as exemplars was agreed by tutors to be of enormous value.

6.5.7 Student Responses

In response to the question, "Can you learn to be creative?" students replied variously, "yes, if you let yourself be guided by the tutor and let yourself go a bit, use more of your intuitive side", and, "yes, but you need to have the conditions to

encourage you to be creative" and, "that's a hard question!". One of the tutors commented that students would often say, "I didn't know I could do this" after successfully completing a creative task, and three of the four interviewed students with whom I spoke were excited about what they had achieved creatively and technically over the semester. The fourth student, an architectural student who was close to completing his degree and already had Photoshop skills, was somewhat familiar with "being creative" and using the software, so was more restrained in his approval.

Students principally undertook the unit as independent learners and were happy doing so. Community was either not required or found elsewhere. The interviewed students said they might engage with peers via the discussion board early in the semester when they were encouraged by tutors to do so, but otherwise, having casual or near full-time employment and full-time study commitments meant there was little time for engaging with others in the unit unless necessary.

For the interviewed students this was their first online unit, even though they were in the final or near final semester of their degree. The mode of delivery seemed to add to their satisfaction with the learning experience. The flexibility it offered with regard to attendance, the lack of group work and the reduced need to travel to and from university were all bonuses. One student commented that her on-campus units were often more "intense" because of the added stress of arranging meetings with peers outside of class time, so the online unit provided a convenient contrast to that. However, the trap was that online studies might be neglected because there was no attendance requirement. The conclusion from the students was that the online environment did not limit learning to be creative. "If there is a limitation, it is yourself", said the media and communications student. "But it also depends on your teacher, and Leo is really good."

The students understood the parameters within which they had to work and did not perceive these as negative constraints. They seemed confident and comfortable about having their creativity assessed and felt able to follow their interests. Motivation for creativity, however, was important. The architectural student saw it as important to be given the conditions for creativity in the first place, and then the freedom to push the boundaries, do the extra research and hard work, and use tools and techniques not used before. The engineering student was motivated by the

contrast he found between this unit and other engineering units. He saw it as a welcome change: different, but complementary. “Even engineering is not all black and white, you know.” He affirmed that the conceptual journaling learnt in Leo’s unit was a process he would take with him into his professional life as a way of processing and developing engineering ideas. A keen illustrator, he very much saw creativity as important for both work and life in general.

Finally, the observations of the architectural student about what creativity meant to him in the context of three different subjects are of interest to this inquiry. In his mind, creativity for architecture was an iterative process involving frequent failure, and “making one plus one equal three”; in his photography unit being creative was about creating ambiguity in images; and in the Photoshop unit it was about being creative with an original idea, pursuing that, and then “creating a digital image from the tools that we’d learnt”.

6.5.8 Learning Design Case 4: Concept Journal

Figure 6.5 is a learning design representing the development of the concept journal for the final assignment of the digital imaging unit. The journal helps students become more aware of the creative processes required to construct a collage in response to a design brief. Students are given about two weeks to complete the assignment. Students explore a certain genre (e.g. mythical creatures) and collect images, sketches, screen grabs, notes and descriptions of interest from their research. They assemble and arrange these images and reflections in the journal in order to show how they arrived at the creative decisions that led to the collage constructed in Photoshop. The final product is presented as a PDF file uploaded to the LMS. The journal accompanies the actual finished collage that forms the other half of the major final assignment. While the tutor is available for support throughout the process, engagement with peers may be slight, if at all. The most likely engagement with peers is during the early stages of the assignment. See Appendix I for a text-based version of the learning design.

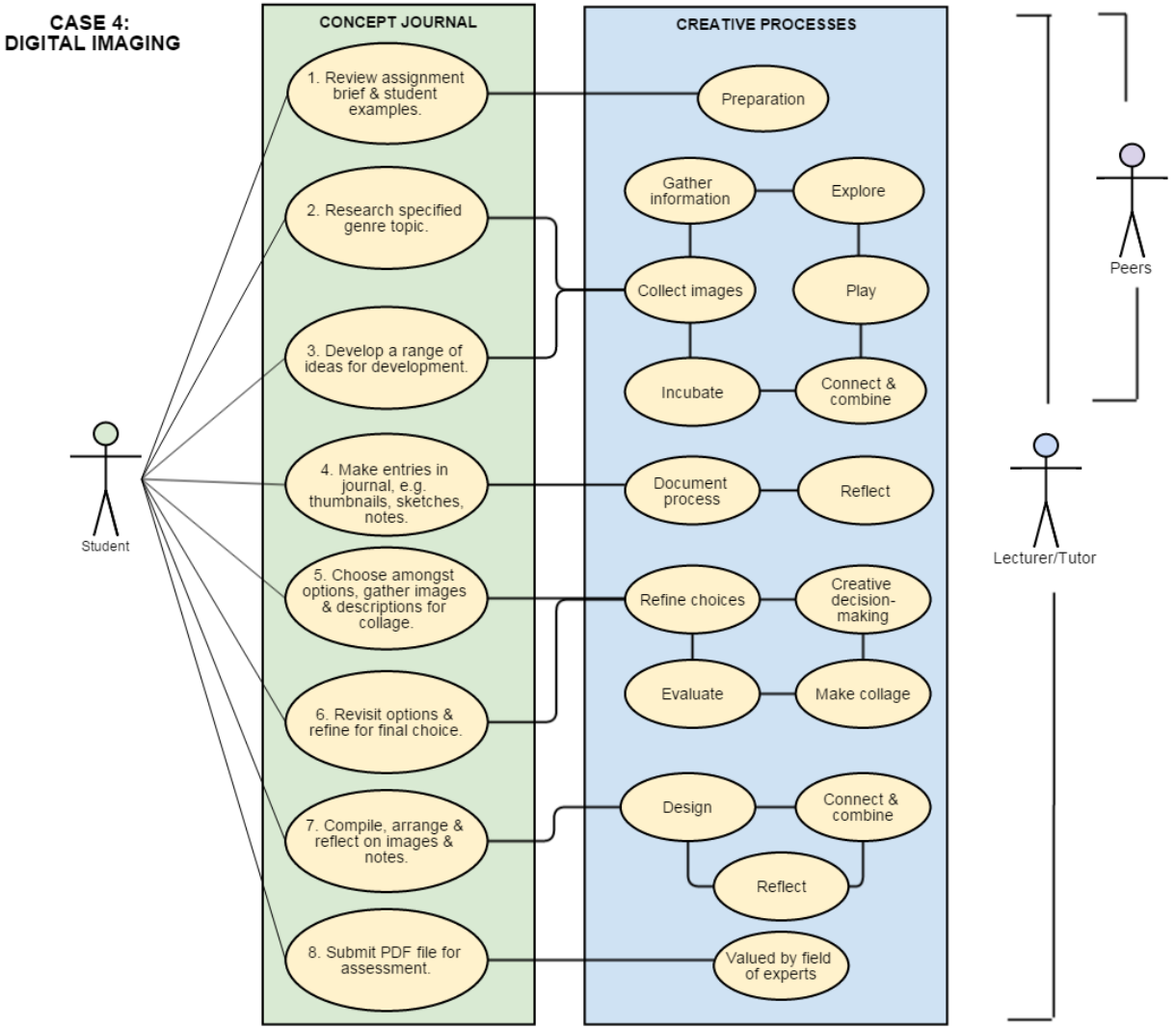

Figure 6.5. Learning design case 4–concept journal.

6.7 CASE STUDY 5: PROFESSIONAL PRACTICE FOR ARCHITECTS

6.7.1 Background

Isla is a registered architect and coordinates an undergraduate 400-level unit, Professional Practice for Architects (PP), at a multi-campus metropolitan university. She is a senior lecturer and also teaches design in the architecture course and the Masters degree. She has been lecturing for six years in higher education and is a PhD candidate. She readily engages with her professional community, academic research, inter-disciplinary collaboration and social media. Her excellence in teaching has been acknowledged via institutional and national awards.

In all areas–academic, administrative and community outreach–Isla is industrious, energetic and effervescent. She sees herself as a creative person, lives a full creative life, inside and outside the university, and is passionate about everything. For Isla, every year of teaching, being a creative educational practitioner, just gets better and better, "and it's not meant to be like that," she laughs. She knows the power of humour for learning and teaching, and her love of learning, nurturing, mentoring and creating shows through in her rapport with students. Since moving to academia she feels able to be more creative than she ever was as an architect. She values authenticity, and says, "to be authentic in teaching what I teach, I need to be *doing* it as well", so once her PhD is complete she intends working more actively as an architect as well as an academic. Interestingly she sees that architecture and academia have much in common, in that both involve not only the creative side, but also spreadsheets and administration: both require management of people and "things".

Professional Practice for Architects (PP) that Isla coordinates is a final-year, compulsory capstone subject. It is offered internally (on-campus) and up to 300 students enrol per semester. Over a thirteen-week semester, students become acquainted with the ethical, legal, business and cultural concerns of being a registered architect. After the undergraduate course students complete a Masters degree and sit for registration examinations before becoming fully qualified architects. Professional Practice was chosen for observation because it was in progress while the unit coordinator was available to participate in the study. Also, the pedagogical design of the unit is Isla's responsibility. Other design units on which

she teaches, where she feels she can apply even more of her creative skills, were not her direct responsibility at the time, so PP was a better option for observing her influence as a creative practitioner and designer of creative educational experiences.

As well as interviewing Isla and observing her classes, I also interviewed four of the seven tutors Isla manages (3 male, 1 female). One was a retired lecturer who has returned to the university to tutor casually, another a recent graduate of the course and newly registered architect, and the two were experienced architects who work for private firms. Three of the four tutors teach on other units in the course (design or construction).

In addition, three students in their early to mid-twenties were interviewed (2 female, 1 male). One was an international student, and the other two had transferred from other degrees (journalism and music) before settling into architecture. All three had part-time work as well as their studies.

6.7.2 Approaches to Creativity

Given the creativity one assumes around the profession of architecture, connected as it is with the design and generation of new and original structures in the built environment, Isla's response to the question about creativity was interesting:

> I don't think I have ever asked a student to be creative. It's not terminology that I typically use. The terminology that I normally use with students is to experiment, or take risks, or to be innovative, or to think outside of the box, or to explore. But I'm not sure that I actually, typically use the word "creative". (Isla)

After our interview Isla asked colleagues whether they used the term creativity and, like her, their response was "no". Of the four tutors only one said he used the term creativity. Otherwise tutors encouraged students to be "interesting" or "innovative", "to have some fun with it". One tutor said creativity was about "expectation".

As her discipline had recently been restructured into another faculty, away from the engineers and scientists, Isla commented that while in one context the architects had been considered the "wild, left of centre, arty people", now they were "the squares" by comparison with the arts and humanities people. Further, she

identifies as an architect not a designer. She also offered this reflection on her own profession:

> I don't think that the profession of architecture is a terribly creative profession, to be honest. I think that the creative part of what architects do is probably 5% of their job, and that's the fun, conceptualising and coming up with conceptual ideas and front-end design work. And, yes, that's a creative process. But even that creative process is bound by a lot of functionality and a lot of codes and standards and budgets and programs. But most of what an architect does is actually working with builders, and administrating contracts on site. So what architects do is not terribly creative. (Isla)

6.7.3 Can you Teach Creativity?

Rather than talking about teaching creativity, Isla talked about the place of design for architectural students. Design is foundational knowledge for architecture; it is three-quarters of their university curriculum, but only a small part of professional practice outside the university. "And it's not something that you can teach quickly. It takes a long time to teach and to develop." Echoing Anna's word about creative writing (case 1), Isla says that few of the students are "naturally gifted and get it straightaway". Rather, "it only improves through a lot of doing and a lot of practising". However, "it's also the most important thing and is the most fun" (Isla). Even though Isla did not say that you could teach creativity, she did say: "that creative side of what architects do is just pure joy, it's so much fun, and it's an absolute delight to be teaching it. And it's wonderful to see students–to see the light bulb go on".

Patrick, one of the tutors, also said that what they are trying to do in the process of teaching design and encouraging creativity (or innovation, or experimentation), is helping students learn to make their thought processes clear: "I've seen a lot of confused thinking, and so the idea is for me to take their intuitive skills and to bolt on a process so they can argue their position in the pursuit of creativity".

6.7.4 Designing and Setting up the Conditions for Creativity

Before discussing the Professional Practice unit, it is useful to illustrate what Isla is able to achieve in a unit where she is more overtly encouraging creativity. In the 200-level design unit she previously coordinated, Isla developed a "wearable architecture" activity. For this, students had to choose a building that interested them, and embody their response by making a piece of "wearable architecture" that exemplified the building. Students created their wearable architecture and then modelled it to others by walking down an improvised runway. It was like a fashion parade of wearable structures. It was a challenging activity in many ways, requiring imagination, reflection on the nature of design, and a level of confidence. In keeping with her authentic approach to teaching, Isla also took up the challenge and modelled her own version of wearable architecture. While the task is fun and freeing according to Isla, it also polarises the class: some do well and others do not like it at all. Why? Perhaps because they perceive that the stakes are high and fear making mistakes. Isla says that the architectural cohort is generally full of high achievers, and those who excel at the wearable art class tend to excel as top grade architects (from the design perspective).

Noting Isla's creative pedagogical capacity in the previous example, it is not surprising that where resources, timetabling, and university space allocation arrangements allow, she has moved away from a transmission mode of delivery in the Professional Practice unit to activities incorporating role play and team work to creatively build students' awareness, skills and knowledge. Her efforts to replicate authentic learning contexts extend to the renaming of the lectures and tutorials as "information sessions" and "office practice meetings" respectively. She invites industry professionals to speak on panel sessions during some of the lectures, replicating a "Q & A" current affairs TV panel show format, with a Twitter feed projected up onto the screen behind panellists, contributing to the multimedia approach. Students participate in in-class role play exercises and simulated office practice meetings to develop their communication skills. Unlike other units in the architecture course that focus on design, this unit focuses specifically on professional communications, and it is here that Isla directs her creative efforts, developing students' oral, written, graphic and information skills and knowledge.

The first creative communication Isla requires of students is during the "marshmallow challenge" in week two. Having formed groups of four, students complete a team building exercise. The task gets a mixed response from students: some go with the flow; others resist bringing their playful, inquiring self to the task. In any case, in 18 minutes, students are required to design and build the tallest free-standing tower they can from four items: dried spaghetti sticks, tape, string, and one marshmallow, which must be balanced on the top of the tower. The highest tower wins (see http://marshmallowchallenge.com/.) The activity forces students to collaborate in a concentrated period of time and play with ideas, leading to a solution. Whether or not students think it is good for them, or interesting, Isla talks about the *energy* in the room during the icebreaker activity. It seems to be a light-hearted entree into a study program where students may expect content and activities to be routine and procedural. The marshmallow challenge is a way to get students talking, thinking, laughing and doing: to loosen up. It is a way to go from what actor John Cleese calls "closed mode" to "open mode" (London Screenwriters, 2014), that is, from a purposeful, slightly impatient and anxious way of being to a more open, relaxed, playful and exploratory mood, where creativity resides.

Isla's next creative task for students is to form an imaginary business partnership with three other team members and develop a portfolio (an office manual), which demonstrates the documentation they have prepared in order to set up their practice. This includes awareness of relevant legislation, codes, insurances, occupational health and safety requirements, ethical considerations etc. In addition, students are required to keep minutes of all "office meetings" held in and out of class, and reflect on the process of developing their simulated company or partnership. Throughout the role play students must integrate theory and practice. As one of the tutors observed, the role plays turn potentially dry and boring material into an engaging and creative process where outcomes are less prescriptive.

As well as the weekly office meetings, the student groups role play two interactions with clients: (1) a pitch to the client articulating and marketing their company's credentials, indicating why their firm should be chosen to undertake a substantial project; and (2) a design response to a brief provided by the client. (The tutor plays the client.) Students typically take on the roles of company directors or partners in the firm, and collaboratively create a business profile, which they "sell"

to the client. Enacting the improvised, time-bounded, face-to-face scenario requires careful preparation. Students have only ten minutes for each role play to win over the client. At any time during the role play they could be interrupted by Isla, who comes in as a demanding client: a wild card with crazy, humorous requirements. Remaining in role, students are forced to think on their feet as they would with real clients, to improvise and move beyond their scripted response in order to deal with the interruption.

I was lucky enough to be able to tag along as a third "client" to observe some of the role plays. The students I interviewed and spoke to after class seemed to enjoy the simulation. Many of the groups were well prepared and rose to the occasion. They dressed for the part, created glossy colour brochures and business cards to market their company, and treated the opportunity as an authentic, real-world task. One pair of students (a group of two) actually improved their already commendable performance when Isla interrupted their spiel. They graciously managed Isla's odd request for a Zumba dance floor in the proposed new office space and deftly continued their presentation with professionalism.

The role play also exposed those students who were not so well prepared. One tutor commented that while Isla was distracting students, the tutor was able to observe her students in role a little more distantly, and noticed how body language could indicate a student's preparedness or otherwise for the task. Like Isla, the tutors valued the opportunity for students to practise their people skills in a semi-structured, non-threatening environment. Most tutors provided debriefing after the event, time permitting, and this supportive, formative feedback would have been of benefit, whatever students' level of achievement, promoting reflection and self-assessment.

6.7.5 Assessment and Creative Teams

As Isla's unit bridges the world of design and professional practice, there is a strong imperative to build students' capacity to work in multi-skilled, creative teams, as per the industry model. Her unit provided opportunities to practise interaction in teams, as well as in *creative* teams. The first two assignments assessed these skills as group work. The only individual assignment was the final written examination based on workplace scenarios (worth 30%). The first two assessments were graded as 30%

and 40% of the overall grade, and included marks for the role plays and the office manual.

By 400-level, Isla expects students to be working with purpose, competence and maturity in a group. Students are provided with information on working in teams, and Isla and the tutors monitor and observe team progress as the weeks progress. However, Isla recognises that sometimes groups do not always work out as planned; some cohorts work better than others. Therefore, she allows students to opt to be marked individually for the group project. All team members must agree and sign a form requesting this. It is not a preferred option, but a solution for some team problems. But as one tutor commented, if students do not work in a team in this unit it is a lost opportunity before they go out into industry.

Most of the time the PP groups work on standard academic research and analytical tasks to fulfil the requirements for the office manual, while at other times they are operating as *creative* groups. Creative group work is exemplified in the preparation for the first role play–the pitch to the client, and the second role play–the response to the client's brief. During this time students continually move from divergent to convergent thinking, from "open" mode to "closed mode". At one time they will be generating ideas for the imagined architectural practice, and at another deciding on the organisational structure and goals of the practice; then they will be exploring ideas for presenting their credentials to the client, after which they choose and lay out a design that translates that approach into brochures to showcase their team's expertise. Once they have successfully landed the project, they will empathise with the client's needs in order to select suitable options, which they communicate to the client, in oral, graphic and written form. Students will constantly be switching from generative to more analytic modes of thinking and doing. As Chamakiotis et al. (2013) argue, the characteristics of individuals within a creative team have considerable impact on the effectiveness of the team and how they deal with creative tasks. The personal experience, knowledge, communication and organisational abilities of each team member are important influences, and the style of leadership is a significant factor. So, dealing with these variables in the context of the PP unit is important preparation for managing business relationships in the future.

The student with the music background (Henry) shed some light on this. He was pragmatic and articulate about how creative groups operate and drew on his

experience playing in a band as well as working in creative teams at university. He works with a group of four at university that has successfully collaborated for some time. They receive good grades and each knows their role in the group. They mostly stick with these roles for assessments as they arise. Henry's role seemed to be one of leadership. The team has a Facebook page to manage group communications, and they know how to quickly assemble all the deliverables for an assignment, using a variety of communication media. For example, they may have to create drawings, a video presentation, and a scale model as deliverables for a design assignment. There is not much time to generate options for a model, so they have to quickly decide on one from a set of alternatives, and then allocate the ensuing tasks to group members. At that point Henry sees what they do as "much more a time management task" than a creative task. He has realised that for the purposes of assessment and to meet deadlines, if one of the group comes up with an idea they really want to pursue, it is better to go with that idea, even if it is "whacky", as long as it is executable, because there is no point "fighting" your team mate over the idea. Time is lost and group coherence damaged. "So when we realised that once he really enjoyed being in charge, and it being his building, and his design that got made, he was happy to dish out the tasks". Through this pragmatic approach the project was completed on time, and met assessment requirements.

> So, looking at it now, I don't like the design, it's really impractical, it will never, ever get built. It's just ridiculous. But we ticked all the boxes we needed to, and sometimes you've got to check out of being creative in order to create something . . . Being less creative you can actually make something good. But if you throw every idea at it, it's just a mess. (Henry)

This was an important observation, that being creative is not just about spending a long time generating ideas. There comes a time when a decision has to be made and the solution confidently executed.[25]

Students with whom I spoke valued the creative group tasks differently. For instance, for one student (Jodie), the marshmallow challenge was a waste of time because her focus is not university but the architectural firm where she works, and

[25] Compare this with the learning design for the conceptual journal in Leo's unit (case 4), which clearly demonstrates this need to move from a generative stage to a focused stage. (Figure 6.5.)

travelling into university to play with spaghetti and marshmallows was, in her opinion, a waste of time; she already had a student group with whom she was familiar and happy to work and did not need "bonding time". "If you've made it to 21 and don't know how to work with other people, there is something wrong," she said. The role play, however, was "rewarding and beneficial" and allowed her to put herself "in the shoes of an architect". Confident herself, she could see that for those less confident students, the role play put them in what Anna (case 1) would call a "low stakes" assessment space: they were in a position where they could try out new and creative ways of being (such as being professionally sensitive and assertive presenting ideas to a client) without too much at stake. As Jodie said: "If you want a client, and you want the business, you have to put on the happy face and the confident face, and sell yourself". Meanwhile, the international student (Margarette) felt that three was the optimal number for a creative group and wanted everyone to give 100% as her time was limited and she had to make the most of it. She wanted to excel, not just pass.

6.7.6 The Impact of Context, ICTs and Delivery Mode

Isla is very comfortable with digital technologies, but as a person who is confident with drawing by hand, she worries that some of her students would rather use the computer to communicate with clients. This is mostly appropriate, except when they are working on a building site. She says that while students have good verbal skills they need to recognise that being able to sketch something quickly, or fold a piece of paper to demonstrate what they mean can be a far more powerful way of communicating with builders than pulling out a smartphone and Googling a picture. Many students, however, do not have the confidence to do this:

> I think that is partly because they feel that in order to be employable they must possess skills to be able to draw on a computer . . . But because they are putting so much emphasis on trying to develop their computer skills, they don't draw by hand . . . I think a lot of that creative ability is discovered, or built, through the actual making and drawing–but the *spontaneous* drawing, not the laboured drawing using high-end computer graphic packages. Because that is drafting; that is not design. That is a completely different skill set. (Isla)

Isla sees that “the making” and drawing are ways of coming to a design decision. This resonates with Anna’s belief (creative writing, case 1), where she says that writing, the making of something new on the page, is a way of “coming to know”.

The conflict between the need to learn and utilise high-end graphics and 3D modelling software for design, and the need to be able to use low-end paper and pen technologies for sketching was confirmed by one student. She felt that clients were happier with a computer-generated design rather than a poor hand-drawn sketch, so would rather use the computer to draw. She nonetheless recognised the limitations of the software and how it could influence creativity and design outcomes:

> If you try and design in the software, you find you’re just extruding up from a plan, and you’re ending up with these very box-like shapes that are very typical, and perhaps not as creative as you’d hoped they’d be. (Jodie)

Clearly digital technologies have a major role to play in the lives of students in PP and, as with the other cases, Blackboard (the LMS) has a key role as a content manager and communications hub. From the LMS, communication is mainly one way–teacher to student. Isla uses it to manage the different design streams, and the many tutors and students. In addition, a variety of industry professionals come and go on a weekly basis, presenting lectures on industry specific issues. As Isla commented: “Organising the tutors is the most stressful part of this job,” as keys and rooms have to be arranged for two different buildings, and for the role plays students are accessing rooms not normally occupied by students, such as board rooms, so relations with staff from administrative areas have to be well managed.

In case 5 there was some use of social media, Twitter and Facebook. Isla tended to lead this around lecture time. However, while Isla is surprised that students do not tweet more, one of the students (Henry) noted that Twitter is public. If you tweet a “stupid question” during a lecture, it remains a stupid question in perpetuity, he said. So while he has reservations about social media, he appreciates that smartphones now allow university emails to come straight to him, into his pocket, where his phone lives. This change, where university emails and announcements are so easily integrated into students’ social life via mobile technologies is significant and not to be underestimated. Also, as one tutor pointed out, there are so many tools

available to communicate with students that there is a danger of losing students in the noise, so keeping communications to one source has its advantages.

Finally, in thinking about context and the use of virtual space, it is important to also consider the use of physical space as it impacts on fostering creativity in this case. Like Kasumi (case 2), Isla would prefer a studio environment conducive to a culture of creativity for all her classes, but this is not possible given student numbers. In a studio a sense of community is encouraged amongst peers, and a culture of hard work and excellence. Isla knew this type of studio culture in her student days, and says there is a studio for the design subjects now, but one of the students disagreed that this space was conducive to productive work. As with all the students I spoke to in this study, she liked a quiet place to be creative; however her experience of the studio was less than complimentary:

> Yes, it's a cowshed. Huge timber floors, beautiful high ceilings, but you can imagine when you put forty kids in there how loud it gets. And there's no separation . . . and in four years I have never done an ounce of work in there. (Jodie)

As class sizes grow on campus, the possibility for optimal studio culture time and space decreases. There are fewer placements available in architectural firms and departments, and so the university must do more of the professional training. This has to take place either on campus or by making greater use of ICTs and alternative delivery modes.

6.7.7 Tutors' Perspective

Tutors' views have been incorporated into the discussion above, but in addition it is important to note that the tutors are all industry professionals who take pride in giving something back to the profession. They value their links with the university and care about the students. Tutoring is also a means of gaining professional development credit points–a requirement for continued registration as an architect. All had a strong commitment to teaching, recognise the role they can play in mentoring students and creatively helping students transition to professional practice. They confirmed that Isla's design of the unit and her creative activities, such as the role play, were effective in engaging the students. In addition, they see university as a unique opportunity for students to play with ideas, particularly in design, in a way

that is rare in professional practice; so they encourage students to be creative, even if they do not use those words.

6.7.8 Student Responses

All three students I spoke with were articulate, ready to critique their learning context and the conditions under which creativity might be fostered. Far from seeing the unit as dry and boring, one student who was already employed as an architectural assistant working four days per week said: “It’s the first subject that I’ve come across in four years which has been the most relevant to actually working in an architectural firm” (Jodie). On whether or not you can teach people to be creative the students were circumspect and preferred to think that you could learn the technical aspects that supported creativity, like using graphics software, or rules about proportion, colour and scale, but perhaps creativity came from within. For Margarette creativity was an innate thing linked to expression; for Jodie it was more about problem solving; and for Henry, well, he thought that while others in his creative group might be more talented than he was at design, when they worked together, pooling their skills and abilities, they could come up with successful creative outcomes as a group. The same system worked well for his band.

6.7.9 Learning Design Case 5: Role Play–The Pitch

The learning design in Figure 6.6 represents the first role play for the Professional Practice unit. The aim of the role play is to simulate the actions and creative decisions required to persuade a client that a newly formed architectural practice can provide the services they need. Students form a group and set up an imaginary company or partnership (the Practice), they determine how they will pitch their expertise to the client, and produce regulatory and marketing documents to communicate their credentials to the client. They then plan the pitch and assign roles amongst the group. The students in role have ten minutes to persuade the client (the tutor) why they should be chosen for the project. The role play ends with debriefing, reflection and assessment. See Appendix I for a text-based version of the learning design.

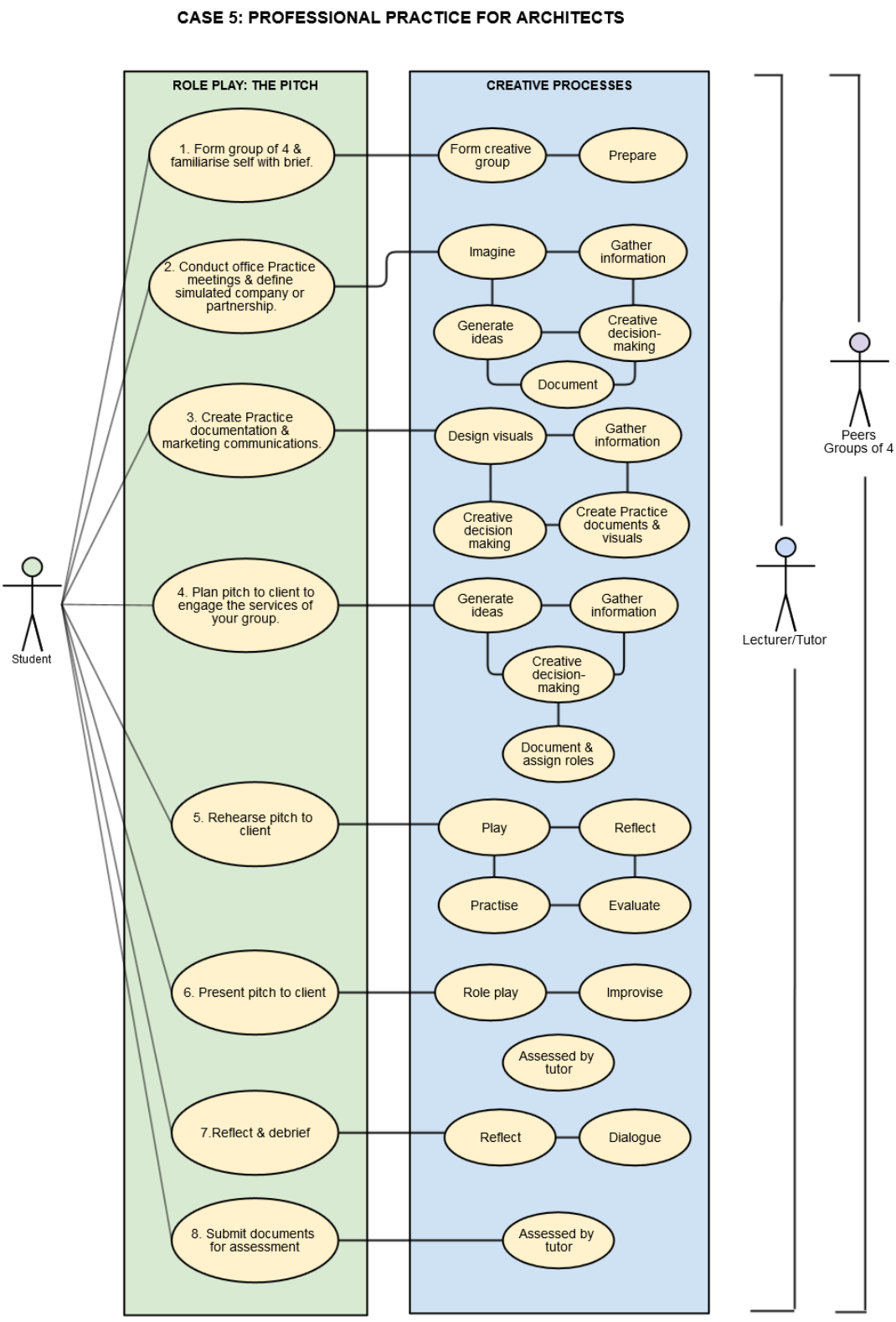

Figure 6.6. Learning design case 5–role play and the pitch.

6.8 SUMMARY

The five case studies provided stories about exemplary practice. Woven into the narratives were the views of tutors and students. The case studies were an opportunity to explore where creativity lies and how it is manifested in practice, and the learning designs demonstrated in diagrammatic form where some of those likely creative processes occurred. They made tacit creative processes explicit. In essence the cases demonstrated the exemplary practitioners' motives for fostering student creativity. They were expressed as follows: (case 1) writing as a creative way of coming to know oneself and the world; (case 2) designing for human/computer interaction as a way of having a creative life, being creative and authentic; (case 3) developing frameworks and patterns that empower students to become engaged citizens as a way of making knowledge accessible; *and* fostering a creative learning and teaching environment for social learning in a reciprocal Freireian sense; (case 4) teaching creativity and the creative process through mastery of a range of technical skills, and keeping the magic while demystifying myths about creativity; and (case 5) the acquisition of professional forms of communication in a design and architectural context conceptualised as a creative approach to managing people and things.

Having closely examined these diverse stories of creative pedagogy, the cross-case analysis follows in the next chapter. A creative environment for the synthesis has been established.

Chapter 7 Being in uncertainties: Multi-case Analysis and Discussion

Being in uncertainties . . . without any irritable reaching after fact and reason.

–John Keats (1817) [26]

7.1 PURPOSE AND STRUCTURE

In this chapter the cases are analysed as a set and discussed in relation to the literature. The analysis revealed a number of paradoxes, highlighting the difficulty of fathoming creativity in an educational setting. However, the cases demonstrate that paradoxes are to be expected, and that living with uncertainty, frustration and discomfort are part of the creative process.

The main themes that emerged from the informed grounded theory (GT) analysis and case study narratives frame the ensuing discussion. Considerable data was realised through the case studies, so while the main findings are discussed, not all the sub-categories are elaborated. The views of teachers and students are interwoven throughout, and the findings are aligned with the research questions and the GT themes.

After an overview of the cases, the chapter begins with a discussion of how teachers and students approached the concept of "being creative" in practice (section 7.3, RQ1). A perspective on the design methods that exemplary practitioners employed to set up the conditions for creativity, encouraging play and developing students' habits of creativity is provided in section 7.4. This includes a model of the elements that contribute to establishing habits of creativity. The section also highlights themes that emerged form the cases about fostering students' vision and voice.

How practitioners work *with* the environment to promote generative spaces for creativity is argued in section 7.5, and includes reference to physical, virtual, affective and cognitive spaces. The importance of finding pathways through

[26] In a letter from the poet John Keats to his brothers in 1817 (JKL, 1, 193–4)), Keats referred to the creative state as "being in uncertainties" (as cited in White, 2010, p. 62). He was referring to the ability of great writers like Shakespeare to abandon tried and true paths, and be comfortable with what comes from that.

boundaries that limit creativity in these spaces emerges as a key finding. Design principles for assessment, one of the major constraints to creativity, are articulated (Table 7.3).

Pedagogical design strategies and methods of working with TEL environments are discussed in section 7.7 (RQ3). This includes discussion of digital and analogue technologies, methods for facilitating creativity online, and the use and non-use of networks for supporting student creativity. Four key elements representing the main themes that emerged from the GT analysis are outlined in section 7.8. The chapter ends with a perspective on the learning designs derived from the inquiry, and a reflection on the paradoxes of creativity.

7.2 OVERVIEW OF THE CASES

A positive picture emerged from the five case studies. Despite ongoing constraints to practice, each exemplary teacher demonstrated the ability and a strong motivation to surmount obstacles that might impede their drive towards creative teaching and creative student learning. They affirmed a need to purposefully prepare students for change, to work with the technology-enhanced learning environment (TEL) around them, and to use analogue and digital tools with a fluency appropriate to the task. They were paradoxically comfortable with the discomfort brought by creativity, and their approaches were forward looking and transformative. They encouraged students towards more flexible and adaptable ways of being, and to be attuned to the world within and without through the filter of a disciplinary lens. The creative tasks they set students were challenging, often beginning with elements of play and fun, and tasks were relevant to immediate learning goals as well as longer-term life goals. Students were not only grounded in their disciplinary culture and domain knowledge, but in creative learning approaches, thereby enabling them to better meet a complex and "unknown future" (Barnett, 2012).

The teachers' encouragement for students to experiment and play, to be creative, was a reminder that students' time at university is a unique opportunity for personal growth: it is a time to question and explore everything, to build one's identity and knowledge of the world, to develop skills that help meaning making, and to be creative with a freedom that may not be present with such intensity at any other

time. As Kasumi (case 2) observed, it is about students “finding their place” in their chosen field, and to do this they need to (creatively) “feed their own lives”.

The emerging picture was an ecological one, revealing a complex system of fluid relationships amongst students, teachers and the creative environment. As the stories unfolded it became apparent that adjustments to one element in the system affected other elements. If, for example, the delivery mode changed or class size altered, then adjustments needed to be made to lecture and tutorial formats, assessment practices and feedback methods (cases 1, 3 and 4). If portfolios were believed to be the best way to assess creative processes, but consumed resources no longer available for marking students’ creative work, then other options had to be chosen for pragmatic reasons, rather than creative ones (case 1). Ultimately, despite the implementation of creative pedagogies (however carefully designed for, resourced and facilitated), there remain students who have other agendas or are not yet ready to fully engage with the creative tasks at hand. This will occur no matter what coordinators or tutors do, or what incentives are offered. Managing all these interrelated complexities (assessment choices, feedback mechanisms, student motivation, ICTs etc.) is a creative task in itself, and this reinforces the argument that teaching is not only about what the teacher does, or aims to do: it is about making learning possible (Ramsden, 2003), within given contextual parameters. There are a multitude of interacting personal, cognitive, pedagogical, logistical, social and technological factors that impact the ecology of the creative learning environment.

As a means of synthesising the data from the case studies, in addition to the case narratives, informed grounded theory methods assisted with data analysis. Figure 7.1 is a representation of the four major themes and categories that emerged from the coding. The themes were: (1) being creative, (2) designing for creativity, (3) working with the environment, and (4) modelling, mentoring and facilitating creativity. The themes are described in Table 7.1 with coding examples, and represented structurally in Figure 7.1 where the sub-categories are also provided. Cross-over between categories and sub-categories was inevitable, so in order to avoid repetition the structure of the ensuing discussion differs slightly from that represented in Figure 7.1, but nonetheless addresses the major themes over the course of the chapter. Modelling, mentoring and facilitating are integrated throughout the discussion as these activities were so much a part of the exemplary

practitioners successful approach to fostering creativity and touched all themes explored here (see Figure 7.1 and Table 7.1)

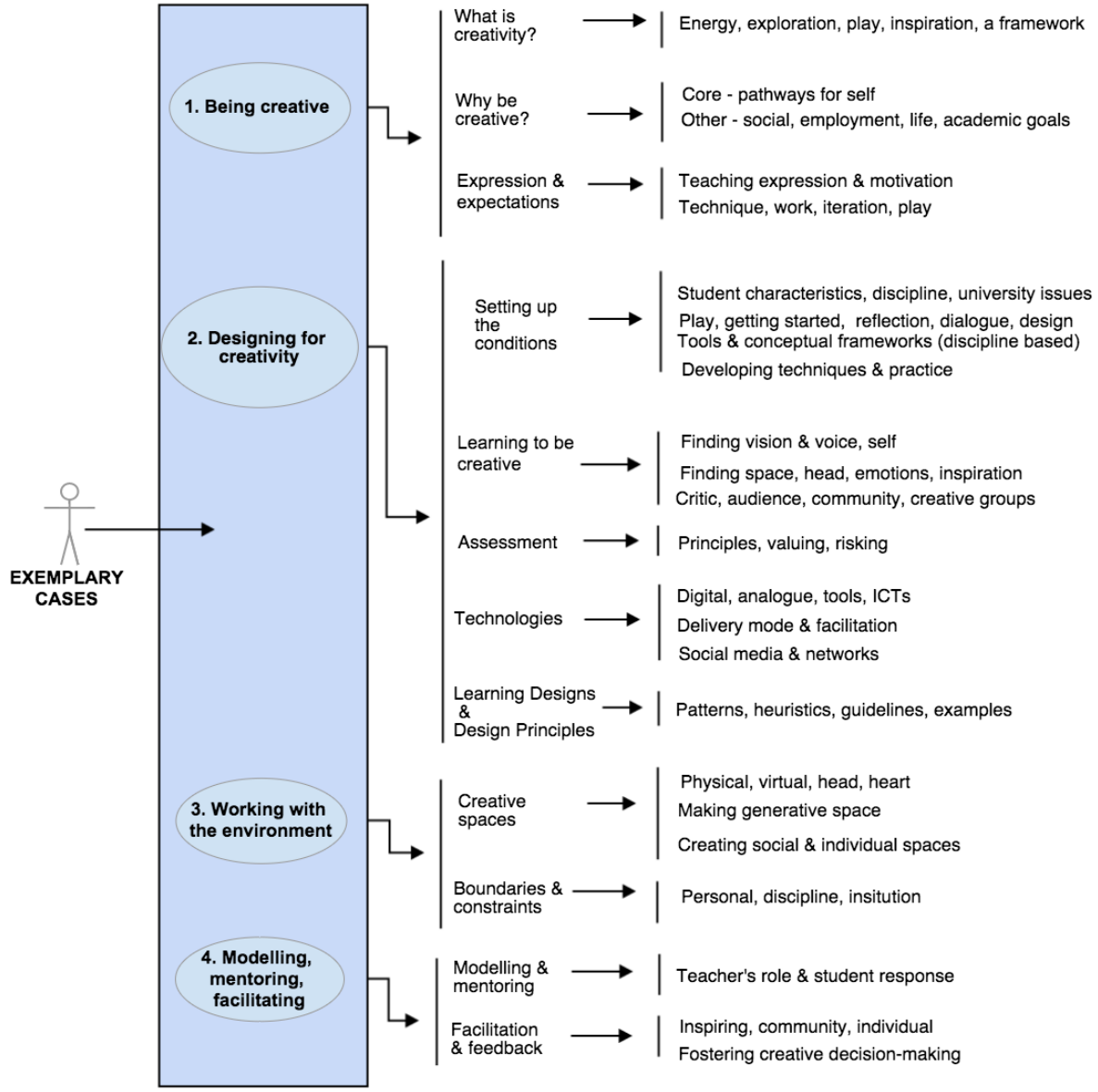

Figure 7.1. Principal themes, categories and sub-categories derived from the grounded theory coding.

Table 7.1

Principal themes, categories and sample codes

Theme	Category	Sample codes
1. Being creative	What is creativity?	"Getting engaged in the task. That's creativity, to me that's where the creativity happens, with the forgetfulness." (coordinator, case 1) "Being creative–how do you even start to answer that?" (student, case 2) Being creative means having energy, being motivated and having a creative output." (student, case 2)
	Why be creative?	"I'm an artist, I know myself that the greatest things are the unexpected things, the things that surprise you." (coordinator, case 4) "To make knowledge something that's accessible." (coordinator, case 3) "If you're not creative, then you are out of a job." (tutor, case 2)
	Expressions, expectations & motivations	"This other guy [lecturer] . . . made it a journey . . . it was creative but using analytical tools . . . it was the way he applied it." (coordinator, case 3) "It was quite exciting because when you hear this word professional practice, you think, ok, we have to deal with some boring stuff like documentation . . . [but] you start to do something different and it's really relaxing." (student, case 5) "I don't particularly aim high for this unit. I just do whatever I have to do for homework." (student, case 2)
2. Designing for creativity	Setting up the conditions	"So we're genuinely getting these concepts out there to them that setting up a generative space where you don't know what's going to come out of it. You put the elements in place." (coordinator, case 4)
	Learning to be creative	"Take a risk, have a go, see where it takes you, rather than . . . being disappointed. " (student, case 1) "I do work best on my own, but I do like going and seeing what other people are doing." (student, case 2) "How do they develop an individual voice within that cacophony of stuff? (coordinator, case 1)
	Assessment & value	"Every project in your life is assessed by someone." (coordinator, case 2) "I hide the term [creativity] in 'response to brief', or 'ability to activate an idea', or 'to demonstrate an idea', rather than concentrating on whether or not the idea is valid." (coordinator, case 2) "I can tell when I have a student who's a really good writer . . . there's some sort of coherence to the work." (tutor, case 1)
	Technologies	"My iPad. It's so horrible. I've got so many apps on there . . . and that's why I always carry a pen and a book with me, because as soon as I start typing on that iPad I automatically flick up and switch apps to the next game, or to Facebook, or to Twitter, or something and I reckon technology is somewhat a bit of a killer for creativity . . . but

Theme	Category	Sample codes
		at the same time I have to give my apologies to technology, because the music coming from technology, it does help me sometimes to get all those creative thoughts out." (student, case 1) "I hate the whole HTML thing, it's just, it's like maths, it just doesn't really work in my brain. So finding a way to be creative in that is really hard because I don't have the skills to do what I want." (student, case 2)
	Learning designs	"It sounds really basic, but I give them a grid of 10 small squares and they've got to do 10 trees within 20 minutes." (coordinator, case 2) "We had to complete a reflective piece on the writing process, which I found to be enjoyable as it made me look at my writing experience and style and how I can improve my process." (student, case 1)
	Design principles	"Do I think that it's possible to turn every single person into a novelist, a poet, a sort of memoirist? No. For lots of reasons . . . there might be the potential, but there's not the work ethic, there's not the interest, there's not the desire." (tutor, case 1)
3. Working with the environment for creativity	Creative environments	"My ideal is the studio model–space to practice and iterate and try, and then throw away bad ideas." (coordinator, case 2) "Being in a time and space where I can do it. . . Being motivated is a big thing." (student, case 2)
	Boundaries & constraints	"The boundaries are important for creative decision-making, and that's important because I'm teaching people how to *make* decisions." (coordinator, case 4) "Any creativity exercise can go horribly wrong for one individual." (coordinator, case 1)
4.Modelling, mentoring and facilitating	Modelling and mentoring	"I think that students can definitely develop their creativity. But I'm still undecided as to whether you can learn to be creative, or that you can teach someone creativity." (tutor, case 4) "I am really competitive so I get inspired by seeing what other people have done and thinking of what else I can do." (student, case 2)
	Facilitation and feedback	"I really believe in creating rapport with the students and creating a social community . . . a nice comfortable space where people are free to share their ideas." (online tutor, case 1) "I think I'm a little bit kinder in class than what I am online. So I think I need to work on that." (online tutor, case 1) "Give positive feedback first . . . it allows everybody to get going, not hitting the poor old person workshopping with a whole bunch of negatives one after the other. " (student, case 1) "We had brilliant tutors . . . and I think that really helped, because they really stimulated the conversation in the class, and they brought so much energy and inspiration." (student, case 2)

7.3 BEING CREATIVE

Section 7.3 addresses RQ1: What do educators understand by "being creative" in the context of learning and teaching in higher education?

7.3.1 And There's That Word Again

The focus of this thesis was not a phenomenological inquiry into creativity. Nonetheless, it is important to tease out the meaning of creativity for case study participants as part of the process of coming to know what it means to teach creatively, and for creativity. It recalls Meno's paradox (Marton & Booth, 2009), where Meno asks Socrates what virtue is. Socrates replies that he does not know and encourages Meno to explore its meaning with him. Meno's objection, however, is that you cannot look for something if you do not know what you are looking for. There are objections to Meno's argument, but suffice to say that looking for creativity falls into the same trap: how can you search for something that you do not know, or cannot adequately name, even though paradoxically you know it is there?

The exemplary practitioners have an answer. They seek creativity by another name, because in terms of vocabulary these practitioners warned that you could not just "throw the term out there" (Kasumi, case 2) and assume students would know what you mean by "being creative". It either needs description and critique (Kasumi, case 2) or a statement about what it means for the context and conditions under which it is to be constituted in the unit at hand (Leo, case 4). This is because creativity "is not enough of a word" (Kasumi). Csikszentmihalyi (1997), confirms this view when he says that the term creativity in common parlance "covers too much ground" (p. 25), and in creativity research the concept is not always defined (Scott et al., 2004). So, as creativity is a troublesome word, the exemplary teachers in this study typically preferred to use other supposedly less loaded words, such as experiment, explore and play when grappling with the concept, debating its meaning with students, or justifying assessment criteria. Certainly the survey (chapter 4) echoed these sentiments and unearthed a plethora of terms that might be used as alternatives to "creativity" (see Table 4.3), and students tended to reiterate terms used by their teachers. The exemplary teachers often referred to creativity *as* "energy" (even "fuel" or "currency"), and commented on the energy in the classroom during creative activities. Paradoxically, this could be while students silently and

individually wrote in response to a creative writing stimulus (case 1), or noisily made spaghetti towers with string and tape in groups during the architecture lecture (case 5). Energy and creativity accompany each other; they manifest in silence and in commotion.

The powerful impact of the word "creativity" was referenced by Alex and Anna when they both warned about the condition of being "caught in the headlights" (Alex's phrase) when encouraging creativity. Expectations and anxiety brought on by the use of the phrase were perceived to interfere with the loose, associative thinking required for creative thought (Mednick, 1962; Russ & Dillon, 2011), particularly generative thinking. Expecting students to respond to a direction to "be creative" was liable to block and immobilise students emotionally and cognitively. As these cases demonstrated, attending to the discourse and vocabularies around creativity pays dividends. Keeping students in a relaxed frame of mind especially during the generative, ideational stages of the creative process is more likely to promote a flow of words and ideas (cases 1, 3 and 5), more rapid generation of alternative designs and images from which choices can be made (cases 2, 4 and 5), or sufficient comfort so that the student can think on their feet and improvise while engaged in role play (case 5). By being mindful of the language required to support students towards creativity, a more supportive and productive climate for creativity is likely to evolve.

Not only is the language around creativity of consequence, but also the context in which it arises. This is significant where teachers ask students to take emotional and cognitive risks. Examples of these danger zones included workshopping a draft piece of creative writing with a class of peers (case 1); exposing your web design choices on a poster pinned to a tutorial wall for peers to critique (case 2); airing your opinions in a tutorial on the link between major social theorists and your own observational data captured while commuting on public transport (case 3); sharing your tutorial exercises online via the discussion board in the first few weeks of semester with classmates you have never seen or met (case 4); and representing yourself as one of a team of directors of an architectural firm, justifying your design decisions given limited information and time to prepare for the simulated scenario (case 5).

What is notable is the care practitioners took in these circumstances to reduce the stress of risk taking by carefully choosing their vocabulary, without implying that being creative would be risk free. This observed skill in mentoring and modelling creativity as a means of facilitating process, creative culture and climate recurs often in the ensuing discussion.

7.3.2 Why be Creative? Motivation and Authenticity

The exemplary teachers were highly motivated and passionate. This applied to their teaching as well as their creative practice and/or disciplinary domain. As Sternberg concludes: "creative people are creative largely not by any particular inborn trait, but rather, because of an attitude toward life: they habitually respond to problems in fresh and novel ways, rather than allowing themselves to respond mindlessly and automatically" (Sternberg, 2007, p. 3). They have habits of creativity (see section 7.4.3). Kasumi's comment picks up on the essence of this: "Because I have this love of the creative process, and this love of the language around design and art, teaching is an opportunity for me to not sacrifice all the yummy stuff that happens in my practice". Creativity is interwoven into her teaching and her creative life. Being creative *is* being; it is identity and meaning; it is not just fulfilling a teaching role, it is what she and Isla (cases 2 and 5) and one of the tutor's referred to as being *authentic*. "I couldn't get up in the morning if I wasn't creative," (Isla, case 5). To be without creativity would be to live a life denying one's deepest inner self, that is, living inauthentically. Whether or not these participants meant authenticity in existential terms (Crowell, 2010; Sartre, 1958) I could not be sure. Nonetheless, they and the other three exemplary teachers exhibited this need to be authentic, true to their inner self as artist or committed social justice advocate. Having this commitment and passion was a pathway to creativity: it opened up possibilities and was a method for embracing change. This may explain why they were so open to adapting and evolving their teaching practice. Their passion fuelled their motivation "to make knowledge something that's accessible" (Alex, case 3), or to "demystify" creativity (Leo, case 4), or "to know" (Anna, case 1).

Exemplary practitioners and their tutors realised that not all students could be motivated to be creative. The importance of motivation is recognised in the educational literature (Biggs & Tang, 2009; Boud & Falchikov, 2007) and in the literature on creativity (Amabile, 1998; Fryer, 2006a; Seelig, 2012). Students are

acutely aware of the role of motivation in their own creative practice, as one student said: “Being motivated is a big thing. Being in a time and space where I can do it” (FG2). Another strategic high achiever said, “I’m not engaged and I don’t particularly aim high for this unit. I just do whatever I have to do for homework” (FG1). A third view came from a student who was a philosophy major (case 3), who commented that there seemed to be less and less time to think deeply about ideas in any of the units he attended, as everything was “rush, rush, rush”. He clearly valued his time at university and the opportunities it afforded him. So, regardless of the teacher’s passion and attention to factors that impact designing for creativity, students’ creativity will still be influenced by their motivation and interest in the domain, their level of specialised domain skills and knowledge, and their ability to use the resources around them and employ domain specific tools (see also Baer, 2010).

7.4 DESIGNING FOR CREATIVITY: SETTING UP THE CONDITIONS

Sections 7.4, 7.5 and 7.6 respond to RQ2: What lessons can be learnt about fostering and designing for creativity in higher education from exemplary educators in the sector?

7.4.1 Play

The exemplary practitioners had many techniques for setting up the conditions for fostering creativity. Anna’s (case 1) four strategies for re-engaging students with their creativity are worth reiterating. These were: (1) design of the curriculum, (2) attention to assessment practices, (3) observation and reflection on relationships and interactions in the classroom (online and offline), and (4) creation of activities and learning spaces for play. These key strategies were reflected in the approaches of the other exemplary practitioners. The question of play is a good place to start discussion around this topic.

The value of play for the development of creativity, especially in the generative stages of the creative process was well understood by all the exemplary teachers. Each unit coordinator encouraged students to play in order to get started. Play was accompanied by an energy and a playful focus, and often a delight in overcoming a challenge, and the learning could be “hidden in the fun”, as Kasumi (case 2) explained. Play in the cases manifested as: play with social norms and

patterns (Alex); with words and genres (Anna); with web-based tools and design styles (Kasumi); with digital images and software tools (Leo); and with patterns of communication around people, spaces, buildings and technologies (Isla). (Note also that some survey participants' definitions of creativity included references to play and emotion (refer Table 4.3)).

The role of play in the development of discipline-based skills has been affirmed by van Loon (2014), and there is an expectation that during play emotions will be mixed (Cropley, 2011; Huizinga, 1955). Emotions during play may be positive or negative and include, for example, curiosity and frustration, joy and tension, passion and reflection. Rowe, Fitness and Wood (2013) argue that a balance of these high and low emotions are *required* for learning. The case study data affirmed that students' emotions were engaged as they acquired discipline-based skills during "academic" play, and emotions were mixed.

Table 7. 2 provides an example of these mixed emotions. It illustrates the likely emotions involved in the role play exercise (case 5). (Emotions were observed by me or reported by interviewees.) Within a simulated office environment, students, as a team, were required to develop a pitch to "sell" their architectural design for new office space to a client. Constant switching between divergent and convergent thinking modes was highly probable during the stages or phases of the role play (see "likely dominant thinking style"). These emotions would need to be managed and understood by students and teachers in order to maximise creative potential and learning during activities.

One method of accounting for the complexity and paradoxical mix of emotions characteristic of play and creative activity is to conceive of the creative process in terms of phases (Cropley, 2011). Using Cropley's (2011) phases of emotions, and mapping the role play into a design process model, the likely phases of changing emotions through the role play exercise are documented in Table 7.2. The five-stage model from the Institute of Design at Stanford (Institute of Design, n.d.) was used for this example, where the design stages are empathise, define, ideate, prototype and test (see Table 7.2).

Table 7.2

Stages and possible emotions experienced during role play

Stage	Activity	Likely dominant thinking style	Possible emotions
Empathise	Understand and engage with client's needs for specialised office space. Gather information.	Divergent	Curiosity, anticipation, empathy, calmness, anxiety, reflection
Define	Define and frame the problem. Clarify goals and problem statement.	Convergent thinking	Focus, logic
Ideate	Generate a wide range of possible solutions (volume and variety).	Divergent	Playfulness, excitement, inspiration, frustration
Prototype	Build iterations of the design documents to communicate with team before final version chosen for client.	Convergent	Pressure, focus, irritation, patience, reflection
Test	Implement role play–pitch design solution to client in simulated meeting.	Divergent and convergent	Confidence, relief, nervousness, disappointment

Note: The design process is based on the Stanford Design Thinking Guide (Institute of Design, n.d.), and the aim of the role play was to pitch an architectural design for office space to a client.

Playing to "get started" in the creative context was not about making things easy. On the contrary, exemplary teachers frequently talked about commitment and the challenging work of being creative. Play, however, does allow the mind to relax so that associative thought can come to the fore. Anna (case 1) used classroom meditation and the generative space of the art gallery to help promote a relaxed state of mind in her writing students. Alex used humour and storytelling to encourage students to think more associatively. He encouraged students to play with notions of power by upsetting cultural norms himself, disrupting student/teacher power relationships within the lecture theatre, or play-acting in the online video podcasts to reduce transactional distance between student and teacher. Having played with ideas as a creative tool of engagement he could then bring in Foucault, Kuhn or Bourdieu at a point where students were more likely to see the relevance of complex theoretical reasoning, and relate it to their own lives. For Alex, play was a way of

moving students into that more associative, generative mindset (see Mednick, 1962; Russ & Dillon, 2011) where new connections could more readily be made.

Play was not about unbounded freedom, however; it happened within constraints and with a purpose in mind in all the case studies. The aim was to encourage "productive play" (Leo, case 4). Teaching students how to play in the early stages of the creative process paid dividends, and through play students could develop courage and confidence to take risks and manage emotions. As one of the survey participants said, creativity is not just the intellect; it is about the whole person (#46). Play for the exemplary teachers was a way of engaging students and encouraging them (paradoxically) through early, low risk failures so they were able to quickly achieve some creative outcome, and thereby have the motivation to continue in a self-directed fashion. "Take a risk, have a go, see where it takes you, rather than . . . being disappointed", Hugo, a creative writing student urged. Lassig (2012) argues that the less creative need more help getting started, and Leo (case 4) observed that if you are teaching a diverse student cohort, where fewer students come with the depth of domain knowledge or creative process knowledge once assumed, then students need more support. This can be provided through modelling and mentoring. This is not dissimilar to Biggs and Tang's (2009) recommendation that to improve learning in higher education the teacher's aim should be to assist all students to adopt deep learning approaches similar to those employed by excellent students. In this way more students can move from novice to expert.

In thinking about creating room for play in the curriculum, breaking the cultural rule that learning is a serious business in universities, Bourdieu's comment in an essay on codification is apt. Drawing on Weber, he noted that we obey rules when it is more in our interests to obey rather than disobey the rule. That is, a rule "is not automatically effective by itself, and that it obliges us to ask under what conditions a rule can operate" (Bourdieu, 1990, p. 76). So why does learning need to be serious business? *When* does learning need to be serious business? Where could we make space for play in the curriculum? For example, room for portfolios, which show where, how and why students have played or experimented with the subject matter. Students can account for process through written drafts, visual concept maps and images, and reflect on process. This demonstrates criticality and develops language around creative decision-making. This may be a productive alternative to

assessment that only judges creative product. While marking *product* may be less time consuming than marking *process*, an emphasis on process may be more useful to the student in learning about themselves and their creativity. This is because feedback contributes to the development of domain knowledge, skills and attitudes. Given the pressure on university educators around assessment, creative solutions are needed here. But allowing room for play means allowing for risk, and university culture traditionally is somewhat risk-averse (McWilliam, 2007). Creative problem solving is definitely required to investigate alternatives around this issue.

7.4.2 Reflection and Dialogue to Engage with Creative Process

Reflection is an important metacognitive skill that all exemplary practitioners drew on to build productive creative habits for their own teaching and as a means of fostering student creativity. The importance of the link between reflective practice and creativity is well documented (Burnard, 2006; Craft, 2006a; Freire, 2005; Schon, 2011). As previously discussed, one unit coordinator and some tutors remarked on how much they enjoyed the opportunity to reflect on their own teaching as part of their involvement in my research.

> I guess it's just a lovely opportunity, because most of the time I don't get to talk about my experiences in teaching, and yet I love it so much and I find it utterly – . . . I can't imagine doing anything where I wasn't doing this. (Beth, tutor, case 1)

The power of reflective dialogue as an authentic way of engaging with students, and *knowing*, is captured by Freire in the following passage. He begins by saying that dialogic practice is not merely technique; there is a deeper purpose:

> Dialogue characterises an epistemological relationship. Thus, in this sense, dialogue is a way of knowing and should never be viewed as a mere tactic to involve students in a particular task . . . I engage in dialogue because I recognise the social and not merely the individualistic character of the process of knowing. In this sense, dialogue presents itself as an indispensable component of the process of both learning and knowing. (Freire & Macedo, 1995, p. 379)

All the exemplary practitioners commented on the importance of this dialogic relationship. Anna also talked about students engaging in a dialogue with the creative

process across boundaries of art forms when she urged her writing students to engage with the works of visual artists in the art gallery. By asking questions of visual artists and of themselves as writers, by seeking relationships, they were engaging in creative and reflective dialogue.

The exemplary teachers' own reflective fluency was evidence of an ongoing inner dialogue, valuing and re-evaluating creative process and product, constantly moving between the inner and the outer world. As Freire (2005) argues: "There is a dynamic movement between thought, language and reality that, if well understood, results in a greater creative capacity" (p. 3). For students, the requirement to engage with and capture their inner dialogue in the form of reflective essays or reports (cases 1, 3 and 5), visual concept journals or a blog (cases 2 and 4), was also a strategy where tacit creative practice could be made explicit. It was a means by which students could develop their vocabulary to communicate how they came to make their creative decisions, so as to be able to articulate and justify that to themselves (cases 1-5), to a client (cases 2, 4 and 5), to their readers (case 1), to the community (case 3), and a wider audience (cases 1-5). Research indicates that the skill of reflective practice cannot be assumed; it requires scaffolding, mentoring and modelling to be effective (Philip & Nicholls, 2009).

7.4.3 Creative Habits Built on Foundational Knowledge, Tools and Techniques

The case studies highlighted the need for students to acquire domain specific tools and techniques, skills and knowledge in support of creativity. These factors were the foundations on which habits of creativity could be built, and the means by which productive habits developed. In chapter 2 (section 2.2), I noted that some see creativity as "the defeat of habit by originality" (Koestler, 1964), while others argue that creativity should *be* a habit (Sternberg, 2012; Tharp, 2003). Paradoxically, these arguments about habits are not necessarily oppositional: they can be entertained in parallel. The first is an argument for originality and abandoning routine practices; the second is an argument for originality and creativity at an intuitive level. Leo (case 4), for example, observed that when students have worked with a complex software program like Photoshop for a concentrated period of time, they are working at a level where muscle memory takes over. At this point the student has sufficient control of technique and tools to be able to work intuitively with speed and fluidity. They have learned habits that now support them through constant creative decision-making, and

that leads to original work. The processes have become tacit. They are working as a jazz pianist would (Berkowitz, 2010), improvising on the fly but only able to do so because of well-developed technical ability and the facility to make subtle creative choices. Through habit they have become more creative, and yet through defeating habit they have worked towards originality and creativity.

Similarly, Kasumi (case 2) believed that technical proficiency should be closely integrated with creative purpose. She used the discrete stages of the visual design process to frame students' acquisition of coding skills and HTML markup language. In order to be creative students had to acquire technical proficiency. However, Kasumi contends that it is easier to teach technical skills because they constitute procedural knowledge whereas developing a student's eye for creative design and interaction is far harder. Paradoxically, students may believe the converse: for them coding and markup seem far harder than creative design processes. The more time they spend mastering technical skills, however, the more these processes become habitual, and the more cognitive and emotional space they have to work on the creative aspects of visual design and user interaction. Domain specific techniques support processes for being creative, and vice versa. As Kasumi argues, if you are struggling to draw a line using digital code, you have little time to work on pushing the boundaries of web interaction design. So while a lack of technical skills and non-productive habits will limit creativity, productive habits, combined with the aid of domain specific tools and techniques, hard work and an understanding of the creative process support creativity.

7.4.4 A Model of Habits of Creativity

Much of the discussion above (sections 7.4.1 to 7.4.3) has been about elements that contribute to fostering students' habits of creativity. The following diagram (Figure 7.2) summarises these elements. To build habits of creativity students need domain specific techniques, tools (theoretical and practical), technologies (analogue and digital) to express creativity, and a sound knowledge of the domain. This must be accompanied by a conceptual understanding of the creative process. Using these foundational elements students can progress iteratively towards articulating creative process and product with their own vision and voice. Skilful facilitation on the part of the teacher is integral for supporting processes, inspiring students and maintaining creative momentum. These processes and skills include play, practice, dialogue,

reflection, and creative decision-making Motivation is key for the whole process as it impacts engagement, purpose and direction. It is one of the elements that assists students to find and set up their own generative space. Generative spaces include individual and group spaces, and cognitive and emotional (affective) spaces; this is explained in the next section (see section 7.5). The two-way arrow indicates the iterative nature of all the processes and the relationship with foundational elements (see Figure 7.2).

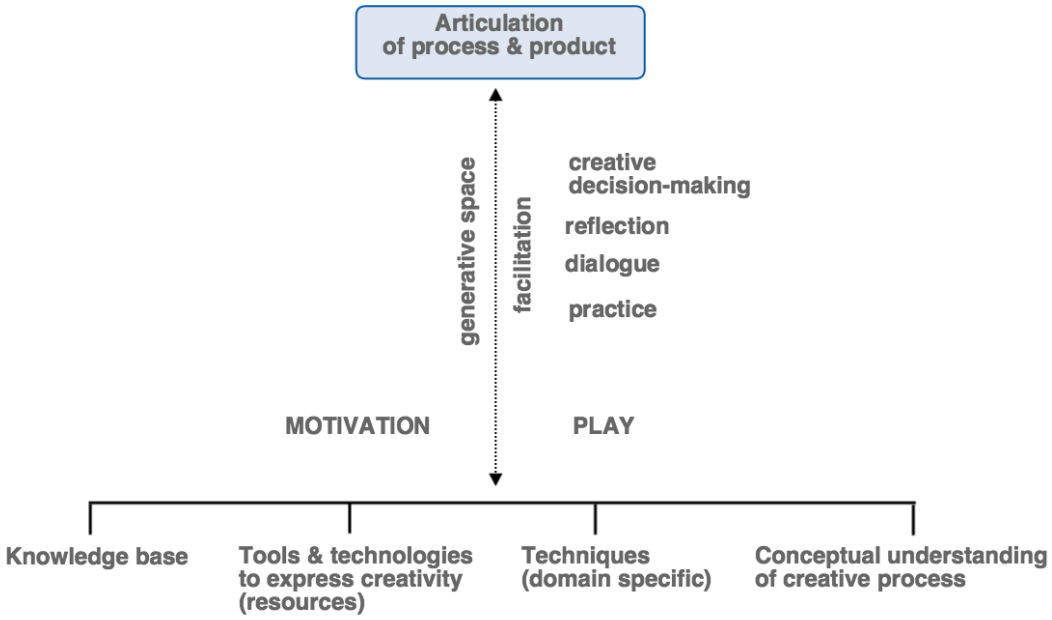

Figure 7.2. Foundations and processes for developing habits of creativity

7.4.5 Purposeful Design

The cases demonstrated that creativity could be successfully designed for in online and blended classrooms. Units were well structured and students were progressively scaffolded through tasks without constraining creative freedom. Assessment goals regarding "being creative" were clearly articulated. This all demonstrated "constructive alignment" (Biggs & Tang, 2009). The implementation of effective educational design and creative facilitation of process, emphasising enjoyment and hard work, made the units successful in the eyes of both tutors and students; and this was explicitly acknowledged. The approach compares well with evidence from Scott et al.'s (2004) meta-analysis, which found that successful

creativity programs were based on building valid conceptions of the creative process grounded in the relevant domain. These successful programs also employed challenging real world examples, and gave students opportunities to apply lessons learned in increasingly more complex contexts.

None of the units was developed along connectivist (Downes, 2007; Kop & Hill, 2008; Siemens, 2005) pedagogical approaches where students would be encouraged to pursue unbounded creative outcomes with little structure and direction. Structure and scaffolding were considered essential to build students' skill base; design was necessary and not an "unwarranted intrusion" (Goodyear & Dimitriadis, 2013, p. 2). As Goodyear and Dimitriadis (2013) remind us, learning cannot be *designed*, but it can be *designed for* (a position that I have supported throughout this research). This research confirms that conditions for creativity can be established, and facilitation excellent, but it is still up to the student whether or not they take full advantage of what has been *designed for them;* and unexpected challenges can still militate against effective outcomes.

7.4.6 Learning to be Creative: Students' Vision and Voice

As well as hearing from exemplary practitioners, this study was an opportunity to learn from students about being creative. Walker and Gleave (2008) argue the need for more research like this, which brings to light student views on the experience of creativity in the formal learning setting. Four main issues emerged regarding the student experience in this study, namely the need to: (1) develop techniques and practices to support creativity; (2) find creative vision and voice; (3) connect with peers and learn about the dynamics of creative groups; and (4) find individual and social generative space (see section 7.4.3 for item 1, this section for item 2, section 7.4.7 for item 3, and section 7.5.1 for item 4).

Students in the case studies confirmed that one *could learn* to be creative, although some were more creative than others. Finding vision and voice was an active process. Exemplary practitioners continually encouraged students to find their own unique creative voice by building on the work of others–with an original twist. While voice was realised by building habits of creativity, and all that entails, motivation and a sense of agency nonetheless played a major part. This comment

from a student in the digital imaging class (case 4) sums up some of the student responses around this issue:

> I think to learn to be creative you definitely need the conditions to encourage you to be creative . . . it's whether you want to be creative as well. It's about you being given the conditions to be creative and then how far you push yourself, how much extra work you put in, how much extra research . . . and also learning different tools and techniques that you'd never been exposed to before as well, that helps to kind of push the envelope. (Eric, student, case 4)

To develop voice, students also need to be able to negotiate obstacles that prevent participation in the dialogue about creativity. One student illustrated this problem for me during a group interview with web design students (case 2) where I asked if she could define creativity. Shocked, she said: "Creativity! How do I even start!". Once we had talked further she was soon able to articulate what it meant for her. The incident demonstrated the need to assist students who get "caught in the headlights" to move beyond impasses found on the road to creativity. The importance of ongoing dialogue cannot be underestimated.

Students also need *vision*: to be able to see the world anew. Enabling vision and voice also helps students to form identity and build self-knowledge (Welkener, 2004). Students in this study confirmed that their teachers invited them to *notice,* and "be creative in their viewing", as Anna (unit coordinator, case 1) phrased it. Offering students patterns with which to view, critique and play helps them create their own repertoire of patterns constructed with personal and disciplinary meaning. The power of Alex's storytelling and humour for example was not lost on students as a means of laying down patterns from which creative vision could develop. Alex used narrative to establish new connections and create memories: "I just hear [his] stories and I just remember it," as one student from case 3 said (FG1). That student now has a narrative she can carry from the classroom into the wider world; and because it resonates with her life she can build and shape further insights using stories as patterns of engagement. It is a way of transcending what the anthropologist Wesch (2008a) calls the crisis of meaning in universities, where students experience a cultural dissonance between their university life and the rest of their lives. Creativity can be used to bridge that gap, build connections, influence engagement, and build personal meaning, vision and voice.

7.4.7. Connecting with Peers: Solo and Group Creativity

Important to finding vision and voice is learning to work creatively as an individual (solo), and collaboratively with peers. While case 5 was based principally on collaborative creative group work (the role plays and the professional practice office meetings), the other cases utilised a finer grained mixture of independent and collaborative group work.

Two definitions are useful for the discussion here. Collaborative learning is an umbrella term that tends to describe "educational approaches where students work together in small groups", often towards a common goal (Hodgson, 2009, p. 4). Collaborative learning once included cooperative learning as a subset, but now the two are often used interchangeably (Collins & O'Brien, 2011). Cooperative learning, however, is defined by Millis (2010, p. 5) as "a highly structured form of group work that focuses on the problem solving". It requires careful facilitation on the part of the teacher, and two essential elements are "positive interdependence" and "individual accountability". This means that the goals of the task give students compelling reasons to work cooperatively together, members of the group need one another to meet the challenges of the task, and each student is accountable for their contribution. Examples of cooperative learning from the case studies are the workshopping for creative writing (case 1, online and offline), the peer review of posters and websites for case 2, the in-lecture human percussion orchestra of case 3 (clapping to allocated rhythms), the sharing of images via the online discussion forum for case 4, and the role plays and office meetings (case 5). Group size for these activities was not always small, however, as it could be between 4 and 100, but all these situations demonstrated *positive interdependence* and *individual accountability*, although in case 5 assessment was individual and group-based. These two dimensions of cooperative learning worked well in the creative learning context.

The difficulties of operating creative groups were discussed in chapter 2, (section 2.6.4). In summary, there is a need to consider the specific conditions under which groups operate (Chamakiotis et al., 2013; Howkins, 2010b; Paulus et al., 2001; Taggar, 2002), the pros and cons of choosing heterogeneous teams versus homogenous teams (in terms of problem-solving styles) (Jablokow, 2007), and the particular need in virtual (online) groups to attend to the context and individual characteristics of group members, leadership styles, and the pivotal importance of the

platform (the technology underpinning networked team interactions) (Chamakiotis et al., 2013). (For discussion of digital networks and groups see section 7.7.5.)

Students in four of the cases reported that they principally worked individually and only made reference to peers for critique or review, unless mandated. While to some extent this replicates what McWilliam and Dawson (2008) identify as "flocking" (see section 2.6.4), for students in cases 1-4 very loose collaborative relationships were observed. From the student perspective, the home base was the individual student, not a "flock". From a teaching perspective this may look like flocking, as students gather together, but I am not sure students with whom I spoke would describe it that way, other than perhaps those in case 5 where collaborative work was compulsory. In addition, even though students in the creative writing workshops, a cooperative learning setting, saw this as a mandated option for critique for which they had responsibilities, their focus was on individual creativity, and in the main they valued teachers' comments on their work over and above classmates' comments (with some exceptions). However, paradoxically they enjoyed silently writing alongside peers in the same space. While each student worked independently, there was a collective energy in the room that contributed to creative output.

Where a more cooperative model operated, the creative groups provided opportunities for peer feedback, practice in communication and reflection on creativity. It was a chance for students to be challenged and defend their creative decision-making, and express their creative voice. Gauging audience reaction is as important to the creative writing student as it is to the web designer or the architecture student. Learning to know whose judgements and what judgements to value is integral to "being creative", and this capability was developed through peer interaction. Assessment practices, however, can militate against this, and depending on circumstances and motivation, students will sacrifice the creative in order to be pragmatic or strategic, and/or to meet unit or assessment requirements, as students in cases 1, 2 and 5 indicated. The learning design figures, Figures 6.2, 6.3, 6.4, 6.5 and 6.6, also provide illustrative examples of the differing place and relative importance of peer interactions in selected creative tasks.

7.5 WORKING WITH THE ENVIRONMENT: FINDING CREATIVE SPACE

7.5.1 Physical, Virtual, Cognitive and Affective Spaces

As noted in chapter 6, Kasumi (case 2) argued that fostering creativity is about "creating an environment where the synthesis occurs", a personal and collective place where connections can be made. This not only refers to creative strategies and methods, but also the spaces where creativity is promoted. If factors such as the teacher's energy and motivation, or students' motivation, to engage in the task were rich and abundant, then this outweighed negative dimensions such as inadequate room size, poor configuration of tables and chairs, lack of time to complete tasks, or limited online interaction tools. Resource constraints were barriers to overcome, not barriers to creativity. This should be compared with survey results, where such constraints were more likely to be characterised as barriers to fostering creativity. In addition, from the student perspective, for some students physical classroom constraints could be overlooked if there were other social benefits; for example, in case 5 the benefits of being with other like-minded peers in a studio environment could override the apparent limitations of a noisy workspace perceived to be unconducive to creative output.

Creative space, however, was not only conceived as physical space (e.g. the classroom or the studio), or even virtual space (the online discussion board, Facebook or other web-based technologies), but also as headspace (affective and cognitive). "When you enter any space, you are immersed in a narrative and become an actor in that story," (Seelig, 2012, p. 88). You shape the environment just as it shapes you. The students I interviewed understood this relationship with space. They talked about finding a physical place away from others where they could write, design, program or generate ideas, with or without music playing in the background, which allowed them headspace to produce ideas. Contrast this desire for isolation with the positive energy that came from working silently beside others in a cooperative learning space in the creative writing workshops (case 1). Students understood the need for solo spaces and group spaces, but of a specific kind. Seelig (2012) talks about finding a "habitat" that works for the individual. This is more than just a comfortable physical space: it includes perceptions about the space and the

way the individual relates to that space. Leo identified it as “generative space” (case 4).

Strategies for opening up these spaces often clustered around techniques for “getting started”, they also included imaginative practices that shaped the spaces in new ways. Alex (case 3) provided a useful example of this in the first chapter of his unit textbook. He begins with a story of himself seated on the floor of a supermarket copying down a risotto recipe from the back of a rice packet. A group of customers dressed as pirates pass him in the aisle. They ask him why he is seated on the floor and he asks them why they are dressed as pirates. This unusual exchange creates an easily accessible space for questioning notions of “normal” behaviour and cultural practice, and then Alex brings in a discussion of highly theoretical concepts such as definitions of society and culture, subjectivity, epistemology and ontology. By connecting the conceptually dense to the everyday, using plain English, and prompting students to connect these observations with their everyday life, he creatively eases open the door to higher order thinking without losing the students in a swamp of academic terms and jargon. He makes a pathway through the boundaries of academic language, opens students’ eyes to a new vision of society and culture, and injects humour on the way. It makes going from Cleese’s “closed mode” (convergent thinking) to “open mode” (divergent, generative thinking) much quicker (London Screenwriters, 2014). Creativity is as much about an attitude to life (Sternberg, 2007, London Screenwriters, 2014) as it is about setting up the conditions for its emergence. Humour can be a powerful entry point into that space where attitudes can be challenged and shaped. (A further discussion on space as it relates to creativity in the online space is taken up in section 7.7.2.)

7.5.2 Boundaries: Constraints as Enablers for Creativity

As excellent teachers,[27] the unit coordinators were noticeably adept at negotiating pathways through constraints that others might perceive as barriers. They could push through boundaries to achieve creative outcomes or to ensure students had a means by which they could creatively move forward. Bourdieu has a definition of excellence that captures this sense of agency:

[27] Measures of typical characteristics of excellent teachers are listed in Appendix J.

> If one had to propose a transcultural definition of excellence, I would say that it's the fact of being able to play the game up to the limits, even to the point of transgression, while managing to stay within the rules of the game. (Bourdieu, 1990, p. 78)

An example of this "game playing" was Leo's breakthrough in his artwork where, due to a set of circumstances and constraints in his life he devised a method to generate digital images using algorithms (macros) (case 4). In using the technology in this way to create art he pushed the boundary of "what is art?". The line between artist and machine was blurred. However, through the "transgression" he gained a whole new insight into his art.

Other examples where the unit coordinators operated at the limits of game playing were when Anna (case 1) took her creative writing students to the art gallery and the tutorial was conducted with students lounging on the floor, or when she led her students through a meditation session in the first lecture; or when Kasumi and Alex's performative humour and playfulness in lectures (cases 2 and 3) expressed their overt enthusiasm for the topic at hand; and Isla's determination to stage a small logistical nightmare (case 4), where she managed the group role plays simultaneously across several buildings, juggling schedules, room bookings, keys and multiple casual tutors. These activities are innocuous on one level, but on another each in its own way breaks some convention or norm associated with university culture.

The university as an organisation provides many boundaries that teachers negotiate on a daily basis, and the case studies demonstrated how practitioners worked around assessment policies, resource constraints, room configurations, and online and blended learning technologies. Kasumi (case 2) commented on the major disconnect between theory and practice, skills and knowledge that the lecture/tutorial model imposed on her students. In her mind theory and practice are "completely and utterly combined" (Kasumi), and should not be separated in the learning process. The studio model was her ideal for developing students' creativity, as it would allow for project work over a longer timeframe, which might facilitate better links with industry and substantial development and boundary pushing. However, traditional university practices meant it was a constraint within which she had to operate. Managing a casualised workforce and finding tutors with current industry experience

willing to work part-time added complexity to her teaching: a constraint also faced by Leo and Isla.

Initially I had thought that institutional time boundaries such as the 12-13 week semester might be raised as a particular limitation to students' creativity, but in observing practitioners I realised that it was again another constraint amongst many. Leo, for example, was not constrained by the LMS for his online course; he recognised its affordances and limitations and gave his energy to other problems, such as devising a system to give adequate feedback within the six minutes available for each student per week.

While negotiating boundaries themselves, the exemplary teachers carefully designed intentional boundaries or a framework in which students could play. Boundaries and constraints are known to be important to the creative process (Csikszentmihalyi, 1997; Csikszentmihalyi & Bennet, 1971). It is unsurprising then that Isla designed the role plays to be conducted within a firm set of rules (case 5); Alex created a framework of weekly activities (case 3) to scaffold inquiry; Kasumi used the design process to shape the students' work over the whole semester (case 2); and Anna insisted on students' commitment to a schedule of cooperative workshopping (case 1). All these activities had clear boundaries around scope, time and task, but offered students maximum freedom to express themselves and meet task constraints without encountering excessive risk, or suffering from "analysis paralysis" (Leo) because there were too many options. (See the table in Appendix K for examples from each of the cases of constraints that engage students and enable creative outcomes.)

If boundaries around a particular task did not work and students were unable to play and create as expected, Alex (case 3) advised that the activity be treated as an experiment, and lessons noted and learnt. Importantly he said, "admit when you get it wrong". This is something educators find difficult to do in universities, where so many are experts in their field and uncertainty and failure are not easily accepted. But students learn from this modelling; they can see that taking risks is a normal part of learning and the creative process, and that their teachers are willing to take the lead on this.

Figure 7.3 provides examples of boundaries identified via the case studies that needed to be negotiated as part of being creative. The constraints are categorised into

personal, *disciplinary* and *institutional* boundaries. The boundaries can be paradoxically flexible and/or resistant, depending on how they are approached and managed. Exemplary teachers become expert at finding pathways through the boundaries, and enable their students to discover their own pathways to creativity.

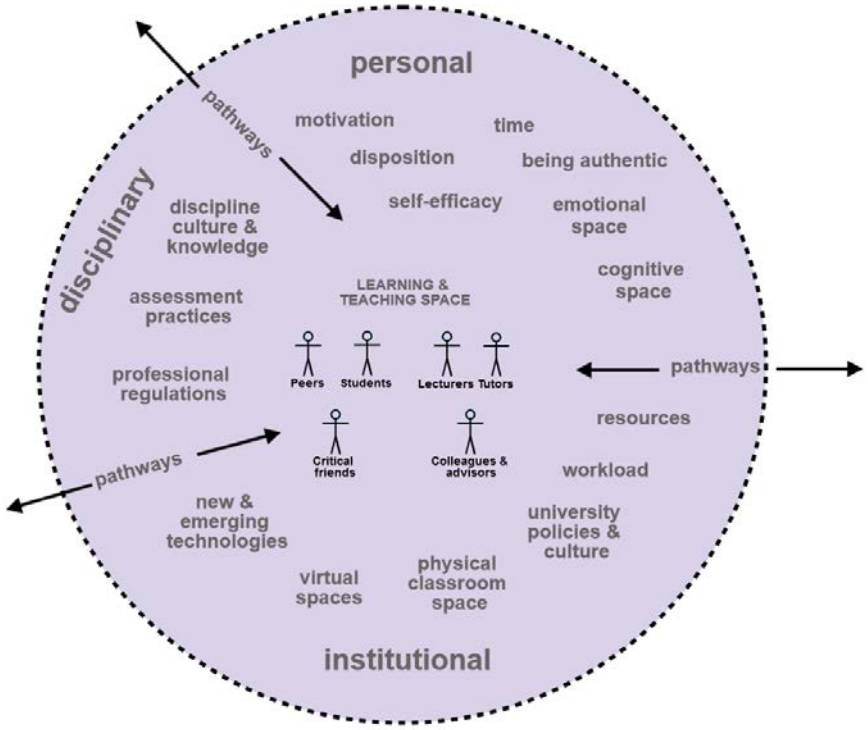

Figure 7.3: Boundaries to be negotiated for higher education creativity

7.6 ASSESSMENT DESIGN PRINCIPLES

One of the major constraints to creativity is assessment. As discussed previously (section 2.5.8), assessment is a key driver for what students do in formal learning contexts and how they learn (Boud & Falchikov, 2007); it is also the mechanism by which educators assign value to creativity and assure university standards. It is a major consideration in the educational design process. However, as the literature revealed and survey results confirmed (section 5.3.2), there is a problematic relationship between assessment and creativity. The survey realised five issues of particular concern, namely: (1) determining assessment criteria for creative tasks; (2) finding a language to negotiate assessment goals; (3) contextual constraints that hinder creative learning outcomes, such as university assessment policies; (4) lack of resources to support creative assessment (e.g. marking practices); and (5) the

strategic attitude of many students in modern universities that prevents deep engagement in learning and assessment activities. While practitioners in the case studies reiterated these same issues and concerns, exemplary practitioners offered pathways for working through assessment problems, as discussed in chapter 6.

Overall, the exemplary practitioners aimed for holistic assessments so assignments built one on another. Examples included the portfolios used in case 1 (at 300-level), and the office manual (case 5); the response to a design brief (case 2), and the major project for case 4 that included submission of a final digital image accompanied by a reflective conceptual journal. Each of these assessments gave students opportunities to demonstrate reflection on creative process and increasing competence over time. In addition, other strategies for assessment of creativity suggested by *survey* participants (see Table 4.17), such as open-ended questions and problem solving, multiple assessment options and project–based assessments were successfully adopted by the exemplary practitioners.

7.6.1 Formative Assessment and Feedback

Teachers do not want to be marking every week as Anna (case 1) and Leo (case 4) explained, even though students are keen to receive as much feedback as possible. Peer review or feedback is a useful avenue for providing formative feedback and assignment of value from a diverse audience. An appropriate level of feedback is important to ensure creative growth (Beghetto & Kaufman, 2007), neither too critical nor lacking in constructive thought. Where peer review and assessment are concerned it is also important to be aware that novices and experts may not agree about achievement (Plucker & Makel, 2010), and those with less creative expertise in the domain will require more support (Lassig, 2012). This is where guidelines for the process of critique assist students in how to give and receive constructive feedback and the language that supports this. In particular, where students are studying online (cases 1 and 4), and where class interaction time is minimised in blended learning contexts due to university constraints (case 3), guidelines and frameworks help students remain focused and able to provide substantive critique. Peer review, whether it is assessed or not, counteracts dependency on others (teachers), and promotes personal agency (Boud & Falchikov, 2007). It also promotes self-reflection and the development of a vocabulary to articulate judgements and perceptions of value. This type of feedback, utilised in the

creative writing workshops and the web design poster sessions (cases 1 and 2), for example, demonstrates what Boud (2007) calls active rather than passive feedback. The feedback is formative and timely, such that the student is able to take advantage of the critique and inform future iterations of the creative work that lead to summative assessment. The focus is not on grading and classification but towards informed judgement and reflexivity (Boud, 2007).

7.6.2 Risking Creativity

The cases demonstrated that creativity *can* be assessed, and four out of the five cases overtly did so. The other case (case 3) did not specifically assess creativity, but expression of creativity was recognised and rewarded during class participation, and as a component of academic essay writing. But despite best intentions and execution of sound educational and creative choices, assessment may still be problematic, and "a killer for creativity" (Anna, case 1). It is a substantial constraint on creative practice in part because of the risks involved and because, as Williams and Askland (2012) argue, creativity is personal, emotional and contextual. Not all risk taking pays off, so how will failure be valued? Will an ambitious failure be valued more highly than a safe success? In case 4 Leo confirmed that the ambitious failure might be more highly valued, but that is because the assessment criteria allow for it; in another context with different criteria that may not be appropriate.

Having a plan for dealing with "failed risks" is a necessary component of designing for creativity. It may be possible to reframe failures as part of the creative process, in which case lessons learned can be discussed honestly with students and colleagues as appropriate. If a collaborative group becomes dysfunctional an option for individual assessment may be appropriate, although this was discouraged in case 5 where one of the goals of the unit was to build professional collaborative team skills. In case 1, a written piece scheduled for workshopping could be rescheduled if inappropriate to share with peers in its current form (e.g. too personal). On rare occasions, because of the personal and emotional nature of creative work a tutor may seek professional help and call in a colleague and/or counsellor for advice.

As a summary of lessons learned from exemplary practitioners regarding assessment, Table 7.3 provides a set of assessment design principles. These principles contribute to the overall design principles outlined in chapter 8.

Table 7.3

Assessment design principles derived from the case studies

1.	Determine which elements of creativity will be assessed. Set up a "self-contained value system" (Leo, case 4) with clear boundaries that allow for substantial freedom within the boundaries.
2.	Determine whether either or both product and process will be assessed. Different criteria are required for assessing each: e.g. process may be weighted for effort, engagement and reflection; the final product might focus on form, use of language, structure, voice, technical proficiency, depth of criticality.
3.	Clearly communicate the criteria and rationale for the assessment approach. Decide whether or not you will engage in dialogue about the concept of creativity generally, or only as it applies to the assessable task.
4.	As use of the words "be creative" may be counterproductive when outlining assessment details, other words that convey the energy, fun and playfulness of creativity may prove more productive. At the same time do not downplay the need for hard work, reflection and iterative practice, all of which are required to meet a creative challenge.
5.	Use low risk or formative assessment to build student confidence and motivation, particularly in the early stages of the creative process.
6.	Discuss the difference between building on the work of others and being derivative, as originality may lie in the execution and/or the imagining of the creative work. Give students patterns to follow and invite them to find and create their own patterns. Pattern finding may include observation and original research.
7.	Engage students in peer review and evaluation activities to develop criticality and the ability to articulate judgements and the rationale for creative decision-making.
8.	Try assessment through achieved learning outcomes rather than intended learning outcomes (following Cowan, 2006). Students set their own learning and creative goals within a specified framework, reflect on how goals were met and the level of achievement. Portfolios, concept journals and reflective journals are useful for this.
9.	If marking creative work online, investigate tools that allow for substantive, customisable feedback that minimise marking time, but allow for meaningful commentary, supportive of future creative effort.

7.7 DESIGNING FOR AND WORKING WITH THE TECHNOLOGY: TEL PATHWAYS

Section 7.5 responds to RQ3: What is the role and impact of TEL environments on the development of creative pedagogies?

7.7.1 Choice: Digital or Analogue?

Although digital technologies ubiquitously mediate so much of our daily lives, the case studies indicated that to foster creativity, digital tools need not be the only choice: the tool chosen should be fit for purpose and context. Sometimes it will be an ICT; sometimes it will be something much simpler. Even though the architectural students were required to use 3D graphics programs and create animations using sophisticated computer programs, Isla still wanted them to be able to do a quick sketch, using pen and paper when talking with builders on a construction site. Anna wanted her creative writing students' to be able to disseminate their creative works to the rest of the class for critique via the online discussion board on the LMS, but she also recommended the use pen and paper to conceptualise ideas, map out plots and sketch characters. Alex encouraged students to use Facebook in class to demonstrate the power and reach of social media, but at the same time he encouraged them to see that banging a drum and hand clapping a rhythm pattern with a group of peers can teach much about variation in cultural practice, and how difference can lead to harmonised action.

From observation and interviews it was apparent that exemplary teachers found a method for managing the role of digital technologies within their teaching practice. While there were some strong comments in the survey (see section 4.8.1) about the limitations and affordances of learning management systems (LMSs), none of the exemplary teachers let the delivery platform interfere with their ability to foster students' creativity, either in a blended learning setting or in fully online mode. They acknowledged its place in the scheme of things and gave energy to other issues of more importance to them. Leo (case 4) said that it was "just an interface". I do not think he meant that the technology was neutral. I interpret his sentiment to mean that in the scheme of things, of all the technologies he has to manage for his digital imaging unit, in his other subjects and his artistic practice, the LMS is just a platform for delivering the unit: what the students do with what is on offer via the

platform is of greater significance to him, as is the course design and how it is facilitated, and the feedback given to students.

Nonetheless, Chamakiotis et al. (2013) conclude that in virtual groups the platform is "pivotal" (p. 276) (as in cases 1, 3 and 4), but it is also important how participants use the technology, and the attitude and leadership style of those managing groups. So for the case studies, the attitude and leadership style of the unit coordinator and tutors was crucial to online success in the two fully online courses, cases 1 and 4, and the blended unit case 3. The point needs to be made about the importance of effective teaching "presence" (Garrison & Vaughan, 2011), and how that impacts creative learning outcomes (see section 7.7.2).

Students, however, had a more conflicted relationship with the technologies. Two of the students expressed frustration in coming to terms with digital technologies in general. One of the web interface design students (case 2) said she hated "the whole HTML thing", as she struggled with the balance between being creative in the web environment and the technical skills required to support that goal. A creative writing student expressed a similar love/hate relationship with her iPad because of the distractions it offered, but felt warmly towards the digital music library available on the same device. This student also expressed preference for writing with pen and paper and stated a strong dislike for learning online. She was aware of the conflicting sentiments this picture presented. But as Kasumi (case 2) said: "The technology is as wonderful as it is horrifying". The students were not alone in struggling with the affordances and the limitations of ICTs.

The cases indicated that teachers and students need to continually evaluate available technologies, analogue and digital, for their contribution to the creative process. Laurillard (2012) recommends that teachers be proactive about this. New and emerging technologies continue to impact the way professions develop, and this was affirmed by two lecturers and one tutor with regard to photography and architecture. Leo (case 4) remarked on how technology now democratises photographic skills, making it easier to produce sophisticated images without being a professional photographer. Adam, one of the architectural tutors (case 5), observed that the role that architects play in adding value to design in the built world is no longer recognised as it once was, because of the ease of use and accessibility of digital design tools. As a consequence his argument is that architects need to be able

to do more to show how they can add value as creative professionals. Leo similarly explained that having a well-trained eye and an understanding of the creative process will do more to help students in the future than mere technical facility with the software.

7.7.2 Facilitating Creativity Online

The tutors from cases 1 and 4 demonstrated the importance of facilitation in the online environment. They discussed the need to develop a communal space where students were comfortable to share creative work, often with peers they had never met. Tutors in the online units realised this was a new interaction space with its own difficulties and that it took time to develop the skills of online facilitator and ensure the virtual classroom worked to students' advantage; one tutor (case 1) talked about nurturing students in the space. Two tutors (cases 1 and 4) commented that it was difficult to determine online students' level of engagement if they did not engage in conversation and critique with other students via the discussion board. They compared this with tutoring in the face-to-face context where a glance around the room helped gauge students' interest and reactions by reading body language.

Students needed to be coached in the use of the space. Guidelines were important for the maintenance of a positive and trusting climate of cooperative sharing and critique. Guidelines are important in any learning context but where creative work is to be shared amongst peers online they are critical, and lecturers and tutors appreciated the need to maintain a safe working environment and climate by modelling interaction styles themselves. While tutors could often do little about the physical classroom, or the delivery platform for online classes, they could change the climate of the generative space through their methods of modelling specific techniques, offering additional tools for creative practice in the domain, facilitating students' creative growth in the social space, monitoring students' response to guidance and adjusting feedback accordingly. Effort needed to be expended coaching students in giving and receiving constructive feedback amongst peers.

Vaughan, Cleveland-Innes and Garrison (2013) and Garrison and Vaughan (2008) explain this facilitative role in online and blended learning spaces and communities of inquiry in terms of "presence". This presence has social, cognitive and teaching dimensions. *Teaching presence* may be understood as "the effort and

activity around the designing, facilitation, and direction of cognitive and social processes in learning communities for the purpose of realising personally meaningful and educationally worthwhile learning" (Vaughan et al., 2013, p. 2). This "presence" needs to be enacted, and is necessary for these spaces to be successful. Students need to know that the teacher is there with them and cares about their creativity in the online space. This is conveyed through the tone of all resources (e.g. briefing documents, guidelines, multimedia), the responsiveness to online communications and the adoption of a respectful, reciprocal, Freireian (Freire, 2000, 2005) acknowledgement that we can all learn from each other.

7.7.3 Online Impact

Given the technology-enhanced learning (TEL) landscape in which these case studies were grounded, and having noted the importance of nurturing and coaching students online, building community and effective teaching presence, I had thought that the online space would have more impact on the fostering of creativity than I observed. In terms of delivery mode, the main observable differences between blended and online modes were around students' social proximity and opportunities for spontaneous interaction with peers. At the university, students sit beside peers in lectures and tutorials. Opportunities can be made for interactions, peer to peer, and student to teacher, in the support of creative activities. Students who study online, however, tend to work alone at home, and interactions with peers and teachers are more often asynchronous, mediated via mobile and digital devices, so there are fewer opportunities for more fluid, spontaneous interactions, although this is changing.

From my conversations with online and distance students, however, this did not seem to inhibit the development of their creativity. The effective educational design of the fully online units (cases 1 and 4) may account for this. The designs maximised individual creative work, but where cooperative work was required (case 1), or encouraged (case 4), structures were established to support these interactions, and tutors actively facilitated communications. Students from cases 1 and 4 remarked on the effectiveness of the educational design and the pastoral care, and care of creativity they received from tutors.

Bower et al. (2011) argue that enrolment pattern is less relevant as on-campus and off-campus patterns of engagement and interaction becomes less differentiated.

The boundaries between the two modes have become blurred. All students increasingly interact via mobile smart phones and Wi-Fi-enabled tablet computing. The ICTs that allow for synchronous online interactions are more readily available and accessible, and provide opportunities for spontaneity (i.e. where use of the technologies does not default to transmission modes of learning). The power of digital and mobile technologies now increasingly allows for ubiquitous creation, co-creation, collaboration, documentation and dissemination, providing there is good access and connectivity. Whether students study on campus or online may make little substantive difference. This, and evidence from the case studies, indicates that possibilities for fostering creativity online are increasing and educators need to be equipped for this eventuality.

In the past, the transactional distance between learners, peers and teachers may have been greater for online students than their on-campus counterparts, but this difference is now less attributable to enrolment mode. Transactional distance (Moore, 1980, 2009), the "physical separation that leads to a psychological and communications gap" (p. 2), was once a feature said to distinguish distance and online interactions from those experienced by on-campus students. However, transactional distance does not need vast geographical distances to be present: this distancing can occur in a face-to-face lecture theatre or tutorial where the student feels disconnected from proceedings. Where students are focused on creative work, however, as in the case studies observed in this research, there may be less chance of this distancing because students are engaged in work that has meaning for them, over which they have choice and control, and which entails both cognitive and affective investment.

Online students did not perceive that their enrolment mode inherently disadvantaged them or their development of creativity. Students enrolled in the online units because this met their academic goals and complemented their life circumstances, and they were happy with the unit content, design, assessment, facilitation, feedback and support. Students in case 4 were motivated to finish their studies as they were near to degree completion, and chose a unit where they could focus on their own creative work. Collaborative group work was common for the engineering student and the marketing student (in case 2), so the opportunity to organise one's time more flexibly for at least one unit was an advantage. This

"mixed mode" enrolment indicated another blurring of boundaries that seemed to carry more benefits than limitations for students.

From this it can be seen that contextual and motivational issues play a part in shaping preferences for on-campus or off-campus study and creative development. Increasingly in the future it may be that the only way to complete many courses will be via online enrolment, as a reflection of institutional strategic, economic and political imperatives. This will impact students and educators alike.

7.7.4 Other Examples of Online Creativity Courses

The five cases compare with two other examples of online classes in creativity with which I came in contact during my research. Firstly, one was a school of art and creativity that I visited in New Zealand, called the Learning Connexion (http://tlc.ac.nz/). The institution offered on-campus and online/distance enrolment and supported students' creativity using a range of technologies, both for the art work itself and in support of students at a distance. Like Leo and Anna's units (cases 1 and 4), creativity is at the heart of what they do, and "delivering" their courses online was not perceived as problematic. As with cases 1 and 4, the NZ courses required considerable organisation, a commitment to mentoring students, and reciprocal student commitment to developing themselves creatively. While students also required a good Internet connection and digital camera to complete their studies, even bronze casting and pottery were possible distance education options.

The second example of a successful online course that provided a point of comparison was a MOOC I attended and completed. It was called a Crash Course on Creativity, from Stanford University. Again organisation and design were important: instructions for each step of the process were clear, peer-to-peer support substituted for personal tutoring, and the requirement for collaborative creative group work was supported with guidelines and effective leadership. Asynchronous and synchronous technologies combined well in this context and the amount of interaction was dependent on a student's choice and need to contribute. Creative groups could be managed across international boundaries (in my case, a group of twelve, across nine countries) providing conditions for creative groups were followed.

Coincidentally these conditions followed Taggar's (2002) recommendations for creative groups: good communication amongst group members, openness in the

sharing of information, and recognition of other group members' viewpoints and ideas, and allowing group members space to be original and use their strengths within the team to advantage. As predicted by Taggar, group and individual team characteristics played a role in the success of the creativity achieved, as did leadership style and the platform utilised to deliver the course. Assessment in the MOOC still required further development as this was peer assessment and though clear guidelines were set, problems interpreting the guidelines, or differences in motivation of some students marking the work of others limited what could be achieved. Nonetheless it demonstrated that regardless of geographical and cultural distances creativity could be fostered online at a global scale, and that creative groups can work well online.

Further examples of the creative benefits and limitations of online courses and tools for creative development are provided in Appendix L. The examples include creative processes such as idea generation and problem definition, reflective thinking, opportunities for dialogue and sharing and evaluation of creative work (see Appendix L).

7.7.5 Digital Networks

Social networks and communities supported by new and emerging technologies are now ubiquitous (Castells, 2001; Hartley, 2011). The literature suggests these networks underpin all social interactions, if not all student learning (Mason & Rennie, 2008; Spring, 2012), and Johnson et al., (2014, p. 10) in the *Horizon Report* maintain that "understanding how social media can be leveraged for social learning is a key skill for teachers". I had thought to uncover more of this dependence on networks of peers or mentors than I observed. However, students reported low levels of usage of social networks for their university related creative tasks. If a private Facebook site existed for either the single unit or a course strand (e.g. across several undergraduate units, often set up by a course or unit coordinator), students did not report using it with any great passion, or if they did, they only did so occasionally. Alex's (case 3) students were encouraged to contribute to a unit specific private Facebook group during some lectures as part of their critique of social media, and many but not all students accepted the invitation. Twitter was offered but underutilised for case 5, despite Isla's encouragement.

There could be a multiplicity of reasons for this non-use (Satchell & Dourish, 2009) including, for example, the public nature of any commentary, or problems of plagiarism if students shared their creative work online with peers in the spirit of collegiality, then found that other students "borrowed" their ideas without acknowledgement (an incident described by students in case 2). Access to the technology was unlikely to be the reason in case 3 for some students' lack of participation in the Facebook exercise in class, as all new first year students at that institution had been issued with an iPad as a special university initiative that year.

Non-use is a complex phenomenon so conclusions about the causes need to be made cautiously; however, there is evidence from the cases that indicates the links to social networks were weak for students in the observed formal learning context. Some self-organised, student-only private Facebook groups were reported to operate, and certainly some students in case 5 set them up for themselves to manage mandated group work, but the use of social media as reported in the interviews was more for personal and entertainment reasons rather than for formal learning. This finding, indicating differences in the use of social media and new technologies for private life versus study life confirms findings from the cross-institutional study conducted by Kennedy et al. (2008) (see section 2.6.1). It also confirms the view of Mason (2008) that higher education tends to emphasise individual's acquisition of content and skills, rather than management and negotiation of networks of people and resources.

When students in my study were asked where they went for support with their creative work, online networks were not mentioned, but a first response was often "Google". This is of course an enormous network of potential peers and mentors, where informal loose connections can be made and information found, or more strongly tied communities of practice (Wenger et al., 2002) cultivated for support. However, further research is required to know if by "Google" students meant searching for information, or interaction with online communities to find answers to problems, or both. Students from case 2, in particular, who were engaged in research for web interface design, where the knowledge landscape changes so rapidly, might be expected to be continually looking for crowd-sourced information (confirmed by Bridgstock, in press).

If students *did* nominate people from whom they sought support when carrying out creative work, it was their immediate circle of friends and family, flatmates or tutors. Otherwise support came from peers in class, through mandated peer review, critique in workshops, or collaborative group work, especially for cases 1, 2 and 5. Students said they valued feedback as part of the creative process, and the exemplary teachers saw it as their remit to assist students to develop the skills of critique and articulation of creative decision-making, but the idea of "networks" did not emerge in this context. This raises issues addressed by Goodyear, Carvalho and Bonderup Dohn (2014) who question how networks are really used by students, and how we need to challenge assumptions and relationships we have regarding tools or mechanisms, desired outcomes and expected student activities. Bridgstock (in press) suggests that universities need to coach students in the use of these networks. This would better prepare students for learning beyond the university, so that, for example, they operate more as media professionals do, negotiating and exploiting strong and weak linkages to maintain currency and conduct research. In this connected model of learning (Ito et al., 2013) just described, formal and informal learning combine with the aid of loose and strong network ties.

7.8 DESIGNS FOR CREATIVITY: A LEARNING AND TEACHING PERSPECTIVE

Section 7.6 responds to RQs 1, 2 and 3.

7.8.1 Four Key Elements

The case studies demonstrated that exemplary teachers were intentional in their efforts to foster creativity. There was evidence that creativity can be designed for and fostered in higher education, in face-to-face, blended and online spaces. In the creative environment teachers cultivated and negotiated an ecosystem of complex relationships, which included four key elements derived from the GT themes: (1) ways of being creative motivated by a myriad of personal and domain specific goals and practices; (2) methods of designing for creativity by setting up the conditions for creativity; (3) working with the environment rather than against it to establish generative spaces and overcome constraints; and (4) the importance of facilitation style, whereby creativity is modelled and mentored. Figure 7.4 illustrates the four key elements. The importance of personal and domain specific conceptions and practices of *being creative* underpins the model (see Figure 7.4).

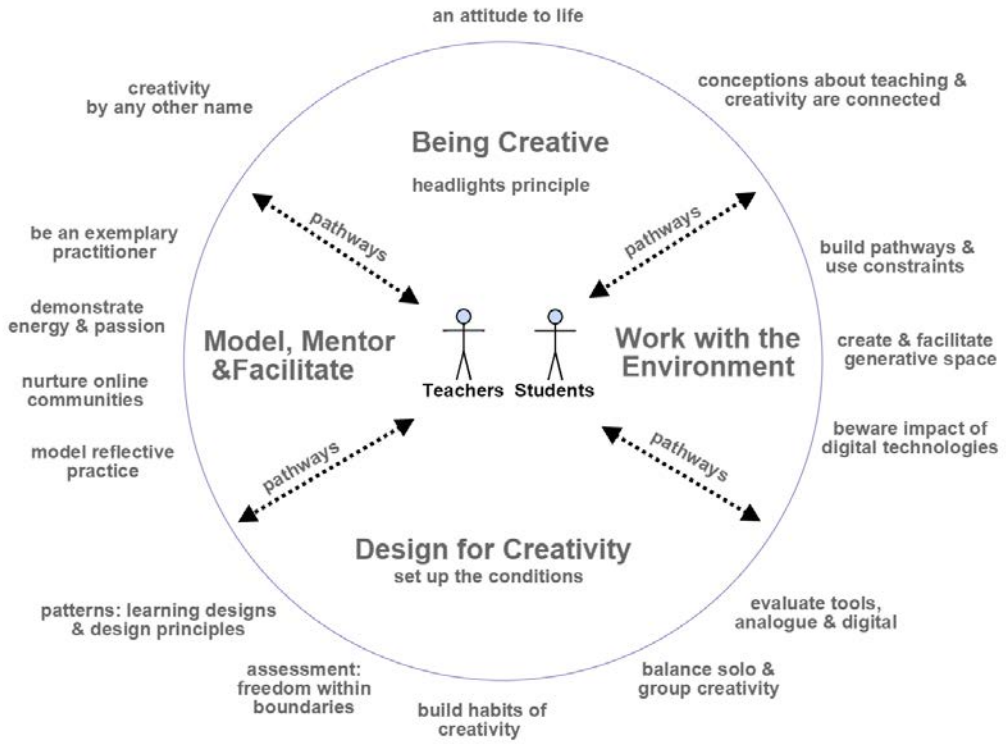

Figure 7.4: A learning and teaching perspective on
fostering creativity in higher education based on four key elements.

The findings indicated that it was not a matter of asking students to "be creative" and leaving it at that. Unit coordinators efforts were purposeful, planned and integrated, and each teacher had a strong commitment to creative outcomes. The word "creativity" may or may not be used explicitly; however, the phenomenon and capability was often referenced using terms such as energy, exploration and experimentation, and incorporated a paradoxical mix of fun and hard work, play and structure, constraints and freedoms.

The unit coordinators demonstrated a creative approach to their pedagogy, defeating habit with originality (Koestler, 1964), and displaying a Freireian (2000, 2005) respect for students' creative capacity. They acknowledged the importance of creativity in the lives of their students beyond discipline related activities. They worked with energy to cultivate a creative environment and negotiated pathways through constraints that might otherwise have limited their teaching or students' creative expression and direction. This included the constraints of assessment. Nine assessment design principles (Table 7.3) were synthesised from the case studies.

The exemplary teachers modelled excellence and provided personal and disciplinary patterns of engagement that students could follow and develop for their own creative purposes. Exemplary teachers were deeply reflective about their teaching, and modelled creative practice as educators, and in their personal and/or artistic lives. They exemplified an attribute that Howkins (2010a, p. 263) concludes is common to creative people: “Creative people may differ in everything else, but they are all persistent, endless learners”.

Students in each of the cases were encouraged to develop productive habits of creativity through practice, reflection and dialogue, and play was a common means of helping students to get started creatively. To realise creative outcomes students needed to develop a sense of creative agency, domain specific skills and techniques, proficiency with specific tools and technologies, and an understanding of the iterative stages of creative process. Students were encouraged to see their world, within and without, with awareness and criticality, so as to develop their creative vision and voice in that domain. The need to learn how to select and develop one’s own generative space, a personalised space for creativity, was critical for realising creative outcomes by students and teachers.

The technology-enhanced environment in which these teachers operated was treated as one of many layers of complexity to be managed and shaped for creative and pedagogical ends. If the technology proved a constraint, then a pathway through that boundary would usually be found. Delivery mode in some cases meant that design for creativity had to be more carefully planned and facilitated, but cases 1 and 4 demonstrated that a unit with a focus on creativity, run entirely online was a viable and powerful alternative.

Learning to be creative online suited students where it met their academic, life circumstances and personal goals. The design of these virtual spaces, and blended environments where students are separated in time and space from teachers and peers, was notable for the positive “teaching presence” (Vaughan et al., 2013) observed. Facilitation of creative outcomes, online or offline, requires an understanding of creative processes and a willingness to mentor students through the emotional stages this entails. The role of committed mentors in these spaces (tutors) was important to building “safe” creative spaces where a sense of community could

quickly emerge, enabling trust and sharing. With a creative climate students are more likely to take risks, and willingly critique their own and others' work.

In the main, creative work was reported to be undertaken as an individual activity, unless creative group work was mandated. Creativity is "not always a group sport" (Leo, case 4), despite the value of creative groups for certain stages of the creative process. Interaction with peers and tutors for the purposes of sharing ideas, gauging audience reaction, and formative appraisal of creative work was intermittent as most creative work was carried out individually. Where creative group work was mandated students appreciated its positive and negative aspects, but simultaneously struggled with its demands and the inherent relationship difficulties.

Extensive use of digital networks by students outside the university setting was not observed or reported. Close friends and family remained the principal source of feedback on creative work outside of the university classroom. This finding indicates an area for further research. Are students limited by "non-use" of these networks for university studies as they are now structured, or does the design of university curricula make the use of these networks irrelevant? Alternatively, are these networks being used by students in ways not observed or detected in this study?

7.8.2 Comparison of Exemplary Design Approaches

An additional comparative summary of the design approach of the exemplary practitioners discussed above is included as Appendix M. The table reiterates the methods and strategies implemented to foster creativity on a case-by-case basis. Practitioners' expectations of students, their preferred vocabulary and expressions of creativity, strategies for promoting creativity, and motivations for themselves and students for being creative are presented for further comparison (see Appendix M).

7.8.3 Learning Designs as Patterns of Creativity

The learning designs derived from the case studies, as visual models and text-based patterns, provided another lens through which creativity could be observed in practice. The learning designs were a means by which the pedagogical approach, creative processes and the sequence of activities for a selected creative task could be captured. The designs showed where individual work predominated in the creative

process, and cooperative group and peer interaction occurred. They outlined iterative creative processes as expected in the overtly creative units (cases 1, 2 and 4), and realised the hidden dimension of creativity in cases 3 and 5 (e.g. Alex's approach to modelling and mentoring students, and his scaffolded social inquiry model; and Isla's role play and office simulations). Through the process of searching for creativity in these units it became apparent from the learning designs that students were engaged in more creative processes than might at first be expected, especially where the primary purpose of the unit was not creative expression or design.

Learning designs, as artefacts and processes, are a means of capturing educational practice and translating it into replicable form that can be shared. While these designs are highly contextualised, made within certain cultural, socio-economic and political environments, they are nonetheless customisable to other settings. Their adoption by other educators also allows for further creativity in the adaptation and implementation, confirming predictions by Garzotto and Retalis (2009).

As Goodyear and Dimitriadis (2013, p. 2) conclude, designs such as these offer a frame of reference where responsibility lies with the learner for initiating a process and creating a product. This was my rationale for placing the learner at the centre of the activities in the visual learning design patterns. The role of the tutor or lecturer is critical in supporting students, and peers play a variable role depending on the pattern of engagement of the individual design.

Creation of the patterns underscored for me three important points: that learning and teaching are creative processes; that creativity is often hidden in the processes of learning and teaching; and that the generation of a learning design is a creative act in and of itself, as is the adaptation and implementation of a learning design. A learning design, therefore, either as *process* or as *artefact*, embodies the creator's philosophical approach to learning and teaching, and their creative values.

7.9 A PARADOXICAL CONCLUSION

From the case study analysis and discussion a number of paradoxes emerged. Firstly Meno's paradox: can you search for something even though you do not know what it is? Then, the essence of creativity: it was found to be both energy and stillness, noise and silence, habit and not habit. Creativity requires play and structure. It evokes contradictory emotions and behaviours: happiness and stress, hard work and play, constraints and freedoms. Low risk failure may *encourage* creativity. Some individuals prefer to go solo while working creatively, but others enjoy working alongside fellow creators in non-collaborative silence. Another paradox is that creative people learn to be comfortable with the discomfort and uncertainty of creativity. This is quite a list, but the paradoxes speak to the complexity of the phenomenon and the difficulties of successfully designing for creativity. Importantly, this research demonstrates that being creative is an attitude to life, so it is not surprising that exemplary practitioners' approach the paradoxes of creativity and student learning with the same passion and commitment that they inject into their own learning and creative pursuits.

This research suggests that there is a symbiotic relationship between teaching creatively and teaching for creativity. The case studies demonstrate that those who are driven to be creative in at least one aspect of their lives enjoy channelling this creative spirit into their teaching. If they are exemplary practitioners, they take pleasure in promoting student creativity; and if their task is to promote student learning, and therefore student creativity, they do so creatively. If teaching and learning are creative tasks, as I believe them to be, then educators and students alike need encouragement to develop their creative capacities.

Chapter 8 The Esemplastic Conversion: Where Diverse Elements Combine into a Unified Whole

8.1 PURPOSE AND STRUCTURE

Chapter 8 merges the two strands of this mixed methods inquiry in an "esemplastic conversion"[28]: a qualitative and quantitative synthesis. Four key research findings are outlined and related to the research questions. The first three relate to creativity as a concept for learning and teaching in higher education (RQ1, section 8.3), lessons learned regarding designing for creativity (RQ2, section 8.4), and the impact of technology as an environmental factor which impacts designing for creative outcomes (RQ3, section 8.5). The fourth key finding is a synthesis of all the analysis and sets designing for creativity within an adaptive ecological framework. The conceptual model brings together elements and relationships that contribute to the process of fostering creativity in higher education. This systems model (section 8.6) and the design principles (section 8.7) are key theoretical outcomes of the study. In the rest of the chapter the implications of the research are outlined, along with contributions to theory and practice, and methodological contributions to knowledge (sections 8.8 – 8.11). The chapter ends with an explanation of the limitations of the research and recommendations for future research. A short conclusion completes the thesis.

8.2 THE MIXED METHODS UNIFICATION

The aim of this concurrent, mixed methods study was to discover more about the problem of how creativity can be fostered and designed for in higher education. Several assumptions underpinned the inquiry: that learning and teaching can purposefully and intentionally be designed for*;* that learning and teaching are inherently creative activities; that creativity is a second generation capability that students generally need to develop and express; and that as the globalised world

[28] Esemplastic: An adjective created by Samuel Taylor Coleridge in 1817, meaning "unifying" ("Esemplastic", 2014). Coleridge was referring to the unifying power of the imagination to bring diverse ideas together.

changes rapidly, and educational and social needs evolve, higher education has a role to play in fostering students' creativity.

In addition to addressing identified gaps in the literature (see section 2.7), this study contributed to debate in three contested spaces within the domain. These spaces firstly clustered around the complex notion of creativity, associated theories and models, and creativity as either encompassing or being separate from other cognitive processes such as critical thinking and problem solving. The second space related to the diversity of approaches to pedagogical models and arguments as to whether creativity could be "taught". The third space captured debate around technology-enhanced learning (TEL) environments where disagreement existed concerning *how* digital technologies were or were not used by students for the purposes of creativity and formal learning, in order to network and connect with others.

As well as these considerations raised by review of the literature, and the overall aim of the research, three research questions shaped the inquiry. These questions frame the discussion of key findings below as a synthesis of the survey and case study findings.

But first it is worth reiterating a couple of central messages derived separately from each of the data sets. The survey revealed that while educators may argue about the nature and concept of creativity, "they know it when they see it". The majority are in no doubt about its value for academic work and preparing students to live fulfilled and engaged lives in a difficult world. The majority also overwhelmingly believe that one can design for, or set up the conditions for creative learning. That's the vision: but how to translate that into practice? In a world where digital technologies and higher education practices and policies play an integral part in shaping the learning environment, creative self-efficacy can be an issue. The solution to this comes from the case studies, where five different disciplinary approaches to teaching creatively and teaching for creativity demonstrated effective approaches. The exemplary practitioners had reflected deeply on what it means to "be creative", and how to work *with* the challenges of the higher education environment in which they operate. They set about purposeful design for creative student learning, and supported this with skilful facilitation, mentoring and modelling of creative practice, without trapping students in the creativity headlights.

8.3 KEY FINDING 1: BEING CREATIVE AND AVOIDING THE LIGHT THAT OBSCURES

RQ1: What do educators understand by "being creative" in the context of learning and teaching in higher education?

8.3.1 Illumination (with Headlights on Low Beam)

The findings indicated that creativity in the educational context was perceived to be a polythetic construct where multiple conceptions abound. Respondents in the survey tended to describe rather than define creativity, and these descriptions included various combinations of ten main elements. The five most commonly cited elements were process, ways of thinking, originality, product, and problem solving. Active process was the most commonly cited element, and notions of originality, key to many contemporary definitions of creativity, were cited in most but not all explanations.

Expressions of creativity ranged from the sophisticated and well articulated, to poorly defined and emergent. If creativity could not be described, one view was that at least one knew it when one saw it. Broad disciplinary differences were apparent around conceptions of creativity, and the survey indicated that the arts and education groups were more likely to reference process in their descriptions compared with their science colleagues who might be more concerned with problem solving; uniformity within disciplines was not guaranteed. Consistently participants showed a preference for restating conceptions of creativity in their own disciplinary lexicon.

While this survey recruited a broader cross-section of educators than previous research (Fryer, 2006a; McWilliam & Dawson, 2007), in the main it confirmed findings of the two earlier studies regarding the views of educators about the importance of creativity. The current research, however, points to a possible change in perceptions over time (and possibly across cultural domains), as practitioners' awareness of creativity as a second generation capacity appeared to be greater in this study compared with earlier research.

Without exception exemplary teachers from the case studies referred to creativity as energy, or demonstrated energy in their teaching and personal pursuit of creativity. To be creative was to play, explore, experiment and take risks. It was not just about being original. It was about the whole person, an attitude to life, a way of

seeing the world, of transforming self, or being authentic. It was about identity, meaning and engagement.

Exemplary practitioners seldom if ever encouraged students to "be creative". This was seen as counterproductive and likely to trigger creative paralysis. Students overwhelmed in this way might act as if "caught in the headlights", unable to freely associate and connect ideas. This could occur at any point in the creative process, and was not confined to the early stages of idea generation.

The need to attend to constructs chosen when engaging in the discourse around creativity was demonstrated in responses to propositions put forward in the survey regarding whether or not creativity could be taught. Fewer educators in the sample agreed that creativity could be "taught" (60%), compared with an overwhelming majority who gave strong support to propositions that it could be designed for (94%), or fostered if one set up the conditions (98%). Creativity therefore can be regarded as a word loaded with meaning, shaped by context and purpose.

The research indicated that conceptions of creativity are related to notions of teaching, and this may affect whether or not individuals regard creativity as "teachable". Creativity was not universally recognised as an intrinsic part of the learning process, and some educators distinguished between learning the skills of being creative and levels of creative achievement. A common qualification in these discussions was the importance of motivation. Practitioners and certain survey participants argued that you cannot *make* someone be creative, just as you cannot make someone learn: personal motivation and application are paramount.

In addition, as creative thinking (a component of creativity) is often conflated with notions of problem solving and communication (Oliver, 2011), understanding whether or not educators distinguish between cognitive processes such as critical thinking, creative thinking and problem solving in practice was of interest in this study as it affects educators' design intentions. Neither the survey nor the case studies provided a definitive answer. The survey indicated that critical thinking was more likely to be distinguished from creative thinking, than problem solving distinguished from creative thinking. However the learning designs (Figures 6.2, 6.3, 6.4, 6.5 and 6.6) derived from practice demonstrated that creative process is iterative, and continually moves through stages of divergent and convergent thinking (see example Table 7.2). The designs do not, however, definitively separate out creative

thinking, critical thinking and problem solving. Both sources of data (survey and case studies) confirmed the contested position noted in the literature on this issue. However the case studies did demonstrate that creative *process* includes creative thinking, critical thinking and problem solving (a position also argued by Runco & Chand, 1995).

8.3.1 Values and Motivations

The survey and the case studies affirmed that creativity was valued for its contribution to academic learning and preparing students for life in general. Creativity for employment purposes was valued somewhat less highly, but valued nonetheless, and analysis suggested disciplinary goals contributed to this finding. The case studies affirmed the core role of creativity as an enabler and a significant capability that could travel with students beyond the academy. By encouraging a creative approach to life and learning, and an understanding of the emotional and cognitive components of the creative process, students could be better equipped to face the challenges and uncertainties ahead.

Belief that one's university valued creativity varied amongst survey respondents, and while there was more agreement that one's department and students valued creativity, the issues were likely to be problematised and qualified. For some, creativity was core to students' educational experience; for others creativity was a hidden or poorly recognised dimension in the disciplinary discourse; and for another group, mixed messages from management along with competing university agendas left attending to creativity a question of priorities. Other factors affecting the relative value attributed to creativity by practitioners included motivations for being creative and a preference for analytic methods over creative methods in university curricula. Disciplinary context, the student cohort, academic level, and students' strategic approach to education also impacted perceptions of value and creativity. A majority of educators believed students valued creativity (determined from survey results), and students themselves confirmed this in the case study interviews. Like their teachers, students tended to frame discussions around creativity in the preferred vocabulary of the discipline and their mentors.

Exemplary practitioners motivations for being creative were expressed variously as follows: the need to know; the drive towards a creative life; the need to

empower students to be critical, creative and active citizens; the need to learn about creativity by engaging in creative process and acquiring technical knowledge and skills; and the need to be a professional communicator with an authentic life. Despite variation in expression, there was commonality in the exemplary practitioners' goals to be creative in life and work, and to model this for their students. Significantly, creative practitioners demonstrated that there is a symbiotic relationship between the drive to be creative, to teach creatively and to teach for creativity. Each of these purposes feeds the others in a reciprocal fashion.

8.4 KEY FINDING 2: DESIGNING FOR CREATIVITY

RQ2: What lesson can be learnt about fostering and designing for creativity in higher education from educators in the sector and, in particular, from exemplary creative practitioners?

8.4.1 Choosing pathways

> Alice came to a fork in the road. "Which road do I take?" she asked. "Where do you want to go?" responded the Cheshire Cat. "I don't know," Alice answered. "Then," said the Cat, "it doesn't matter".
>
> –Lewis Carroll, *Alice's Adventures in Wonderland*

If you *do* know where you want to go, creatively, you need to exercise some creative decision-making and choose a path. Practitioners who excel at creative practice, and creative learning and teaching, are adept at choosing, constructing and negotiating pathways that minimise the impact of constraints. The survey indicated that not all educators have the motivation to push through these boundaries, nor the energy, knowledge and skills to do so. Boundaries may be personal, disciplinary and/or institutional, and include cultural, pedagogical and technological dimensions (see Figure 7.3).

Once a pathway had been chosen, freedom within the boundaries to play is crucial. This allows for serendipity, risk taking, connection making, and unexpected outcomes. Creativity is not located in unbounded freedom; constraints are necessary, but not so overwhelming that they militate against emergence (Seel, 2006). Once *in* the space students can be free to wander, like Alice, and possibly follow any road

they choose. There will be time constraints in the learning and teaching context, however, but constraints of time and place are integral to play and creativity.

Development of creativity was observed to be successfully developed as domain specific tasks, built on productive habits of creativity. Paradoxically creativity was a process of simultaneously creating and breaking habits. Productive habits relied on a foundation of domain specific knowledge and techniques, tools and technologies, and a conceptual understanding of the creative process (see Figure 7.2). Creative habits help students build fluency and confidence, and from this comes individual vision and voice, found within a personal habitat or generative space.

Both survey and case study participants found challenges with assessment. Survey participants offered the view that creativity was problematic, difficult to assess, and possibly could not be measured. Four of the five case studies where creativity was overtly assessed (cases 1, 2, 4 and 5) demonstrated, however, that suitable criteria for assessment had to be found, and that finding a vocabulary for explaining and justifying the assessment regime was key to mentoring students along the creative path. If resources for marking assignments were in short supply then alternatives offering substantive feedback must to be found. Regarding the strategic attitude of students towards assessment, raised by case study and survey participants alike, exemplary teachers directed much energy to improving student engagement through a holistic approach to curriculum design, and ensuring curriculum relevance through creative meaning making. They were nonetheless pragmatic about those students who were unlikely or unprepared to engage regardless of supports or conditions (see assessment design principles, Table 7.3).

One of the key findings of this research was the relative balance required between individual and group creativity. Individual peers and creative groups were important reference points and creative partners at certain stages of the creative process. On balance, however, students valued time for individual creativity more. Group work had its place but was often less productive than predicted, and the role of peer group leaders and individual motivations for engagement were pivotal. This was especially so in the online environment where dynamics and patterns of engagement could evolve as the group (and technologies) evolved. This reinforced the value of critically evaluating the processes and dynamics of creative groups in more depth. It also highlighted the skill demonstrated by exemplary practitioners in

managing and leading large creative groups, as they relied on their mentoring and facilitation skills to develop a creative climate, supported by abundant reflection and critique.

This study confirms the hidden dimension of creativity, as the case studies demonstrated that creativity does not only reside in curricula that overtly design for or support creativity. Creativity is an important element of the learning process, and is therefore relevant to all disciplines and students. It is also a characteristic of excellent teachers.

Synthesis of the combined data sets resulted in the construction of the design principles set out in section 8.7. These heuristics, the case studies and learning design patterns provide a contribution to practice that can be used in support of professional development activities. Table 5.1 also provides a set of approaches for building a climate of creativity and emergence within disciplines and the organisation.

8.4.2 Learning Designs

The learning designs as artefacts provided another lens through which creativity could be viewed as patterns of engagement. In this study learning design refers to both the process of designing learning and to the artefacts that arise from that process. *Generation* of visual learning designs (Figures 6.2– 6.6) is a particularly useful means of making creative processes visible. The original pattern used for these figures uncovered hidden dimensions of creativity, and in focusing on the activity from a student perspective highlighted the student-to-peer and student-to-teacher interaction points. This was particularly significant where the primary purpose of the unit (subject) was not creative expression or design, and the visual patterning became a tool to confirm where and when creative processes emerged in various learning activities.

Discovering the creative pedagogical patterns of exemplary practitioners, and generating representations of those patterns, through models (Figures 6.2 – 6.6) and other figures (Figures 7.3 and 7.4) confirmed for me that learning and teaching are creative processes. These visualisations of the creative processes also demonstrate that fostering creativity is not only about designing for and setting up conditions: it is

also about *facilitating* the conditions for creativity, and the dynamic relationships that students have with peers and teachers, as mentors and collaborators.

Undoubtedly the generation of learning designs (as process or artefact) is a creative act involving play, experimentation, connection making, and creative reframing of problems. Adaptation and implementation of one's own or other's learning designs is also a creative process: the unit coordinators in this study demonstrated this, and their tutors were an important part of implementation of the designs, reinterpreting and adapting as context and circumstances demanded. This reinterpretation occurs in the process of sharing, and passing the design forward. (See sections 2.5.9, 6.3.8 and 7.8.3 for further discussion of learning design, the text-based learning designs in Appendix I, and exemplary approaches to design in Appendix M.)

8.5 KEY FINDING 3: TECHNOLOGY AS AN ENVIRONMENTAL FACTOR

RQ3: What is the role and impact of technology-enhanced learning environments on the development of creative pedagogies?

The finding from the survey that new and emerging technologies might provide difficulties for practitioners when fostering and designing for creativity was not unexpected. However, that the case studies revealed technology to be perceived as only one of many barriers to be overcome was unexpected, given the complex array of technologies with which each exemplary teacher dealt. Students generally tended to accommodate the technologies as the semester progressed, although they could express a conflicted relationship with the technology (a love/hate relationship), and perceive the acquisition of technical skills overall to be more difficult than expression of a creative approach. Exemplary teachers held a contrary view: the acquisition of technical skills was foundational and could be learnt, even taught, but development of creative vision, voice, insight and articulation were capabilities far more difficult to foster. They were capabilities that could be developed nonetheless.

While the survey provided mixed reactions to issues regarding the place of technology in creative learning and teaching, it confirmed that fostering creativity in the online environment was likely to be more problematic than in traditional or blended learning classrooms. Familiarity with ICTs commonly used in higher education, or years of experience with the Internet did not guarantee proficiency or

strong self-efficacy when designing for creative learning and teaching online. Some participants separated the *mode* of delivery from the *activities* of creative development, or said the two were independent. Similar attitudes were expressed about the impact of large classes on creative development.

Examination of the case studies, however, revealed that all these factors impact creative outcomes. Because the creative environment is an ecology, a change to relationships and elements in one part of the system affects the whole system. The affordances of the technologies, analogue and digital, shape creative outcomes, and pedagogical choices determine the relative impact of class size. Of necessity exemplary practitioners dealt with these sorts of issues, accepting the problem as one among many to be resolved so that creative goals could be pursued. New and emerging technologies were a constraint that encouraged a reframing of problems. While some survey participants complained vociferously about the limitations of the LMS, exemplary teachers worked around the issues, or used alternative technologies to complement their strategies and methods (social media, blogs and media storage sites etc.). Without the LMS, Alex (case 3) could not have managed the high student load and provided adequate support for first-year students within the limited two hours of weekly, face-to-face class contact time; nor could Anna (case 1) or Leo (case 4) have offered their units online to distance students. Notably the LMSs were supplemented with other digital technologies to assist with marking, resource provision, critique of social media, and as tools for creative expression.

An unexpected finding of this research was the limited student use of digital networks and social media to support university related creative tasks. While survey results confirmed the importance of these networks of peers and mentors for the creative process, student interviews revealed limited use of them as an adjunct to their creative learning. It is not clear from the data whether students used these networks for university work more than they realised, or whether non-use indicated a disconnect between the way students learn and research *informally* outside the university compared with patterns of engagement in *formal* learning.

In the new and evolving interaction spaces, digital technologies may disrupt formerly reliable learning and teaching strategies and social interactions. However, this research indicated that, problematic as it is, creativity can successfully be designed for and fostered where higher education units or courses are offered in

online or blended learning modes. Notably, creative leadership and mentoring style will impact outcomes and the ability to sustain a creative climate; this is particularly so where collaborative or cooperative teams operate. As new university models develop, and large-scale online courses (e.g. MOOCs) challenge the diversity of pedagogies now extant in higher education, it is up to teachers to determine what works best in their circumstances. This is a creative challenge that can be approached with a creative mindset and a preparedness to tolerate failure.

8.6 KEY FINDING 4: CREATIVE HIGHER EDUCATION ECOLOGIES

Fostering creativity is more than a matter of equipping students with a generic set of skills. Development of creativity needs to be conceptualised within the complex ecological system that is higher education. It is impacted by personal, political, socio-cultural, organisational, disciplinary, and technological issues: a diverse array of environmental factors. These factors interact to form a web of relationships that shape and influence creative pedagogies and the attendant values. This ecological and environmental view of creativity builds on the literature (Csikszentmihalyi, 1997; Florida, 2002; Howkins, 2010b; Jackson, 2013b; Siemens, 2007), and sets it within the unique higher education context. As Csikszentmihalyi (1997) argues, creativity is not only about individuals and what goes on in their heads; it is a system. Sustaining and nurturing that system is a learning and teaching challenge, but encouraging students and teachers to create and sustain their *own* generative spaces and creative approaches to learning, and life, has long-term benefits.

The ecological systems model is presented as Figure 8.1. The ecology is characterised by emergent and diverse pedagogical approaches to creativity, and diverse expressions and conceptions of creativity. It is subject to changes in university and disciplinary *culture*, *pedagogies* and *technologies*. At the core of the model are four key elements that impact designing for creativity (see also Figure 7.4): underpinning notions and expressions of being creative; pedagogical designs for creativity; strategies and approaches to working with the environment; and styles of mentoring, modelling and facilitation that contribute to the creative culture and climate. In successful creative environments these elements are maintained in balance, even though they are always subject to change and adaptive. Around the central core are boundaries to be negotiated. Based on Figure 7.3, these boundaries

have been reframed as relationships to be negotiated in the process of being creative and engaging with the creative environment. Boundaries that constrain efforts to be creative and to foster creativity are represented as dotted lines, indicating that constraints are porous and flexible. These boundaries manifest in positive and negative ways. They can overwhelm and paralyse students and teachers into inaction, or sufficiently contain and enable creativity, or be reframed as enablers which spur teachers and students to seek alternative action, pathways or expressions of creativity. These constraints are challenging for students and teachers alike and characterised by much uncertainty.

At the centre of the creative space are students and teachers who move in and out of the creative environment via pathways created and shaped by individuals or groups. Individual motivation, application, self-efficacy and ability affect how the creative environment is shaped and traversed, and how disciplinary and institutional cultural, pedagogical and technological barriers are overcome. To design for creativity in higher education means understanding the complexity of the environment and the ways in which each of the elements relates to others, and supports or minimises creative outcomes (see Figure 8.1).

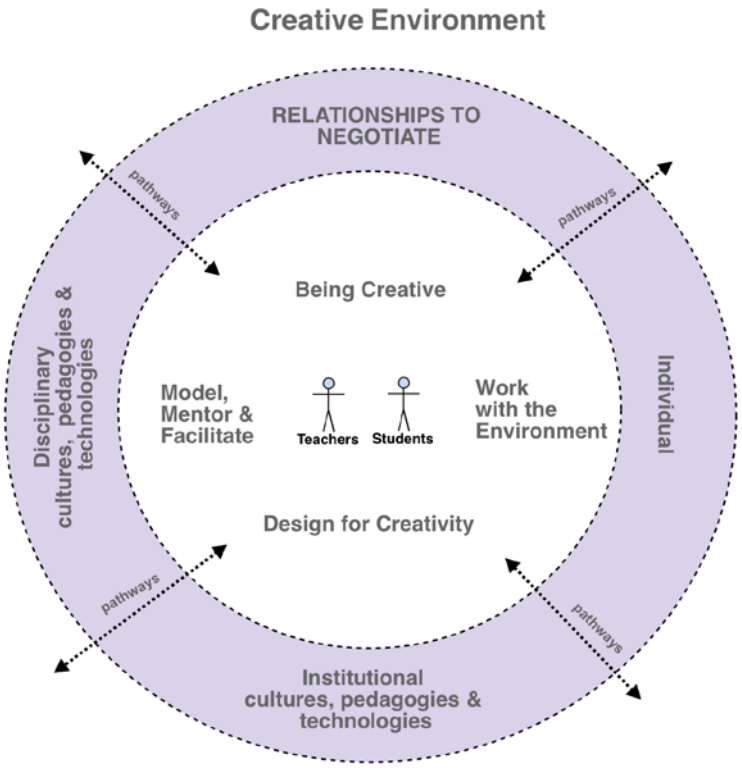

Figure 8.1. An ecological model of elements and relationships that contribute to fostering creativity in higher education.

8.7 DESIGN PRINCIPLES

The design principles derived from this research are guidelines for fostering creativity and have relevance for practitioners in a range of disciplines in higher education. They contribute to theory and practice.

8.7.1 Discourse and Vocabulary

Design Principle 1: The headlight principle: frame vocabulary around creativity so as to maximise connection-making.

Asking students or teachers to "be creative" can be counterproductive. Other expressions such as "explore", "experiment" or "play" may be more effective in setting individuals on a creative path. This avoids the condition of being "caught in the headlights", overwhelmed by expectations and pressure, which interfere with associative thought and connection making: key elements of creativity.

Design Principle 2: Conceptions of creativity and teaching are related.

The notion of "teaching" creativity is disputed, so constructions such as "designing for" or "setting up the conditions" for creativity may resonate more meaningfully with some practitioners.

8.7.2 Creative Environment and Facilitation of Creativity

Design Principle 3: Foster habits of creativity: develop domain specific knowledge, tools and techniques, and appreciation of the creative process.

Prepare students for creativity by modelling and mentoring productive habits of creativity. Creative habits are based on an understanding of the creative process, and domain specific knowledge and techniques, tools and technologies (see Figure 7.2). Develop students domain specific creative fluency. Encourage reflection and communication skills as these support creative decision-making, critique and articulation of process and product.

Design Principle 4: Find generative spaces for play.

Design for and develop generative spaces for play in and out of the classroom. Spaces for play may be virtual, physical, affective or cognitive, individual or team-based. Encourage students to learn how to find and create their own generative spaces and personalised environments for creativity.

Design Principle 5: Create pathways for creativity.

Reframe barriers to creativity as opportunities to consider alternative possibilities. Use constraints such as time, place, task and delivery method to frame creativity. Set parameters within which students have broad freedoms, but are not overwhelmed by choice.

Design Principle 6: Assessment strategies.

See Table 7.3 for assessment design principles, but three key strategies include the following: (1) set up a "self-contained value system" (Leo, case 4), which is context specific, and use it to frame assessment for a particular task, clearly articulating the constraints to students; (2) weigh up the relative value and/or priority of assessing product versus process to ensure the assessment regime rewards creative effort appropriately for the context; (3) when assessing creativity consider whether related cognitive abilities such as creative thinking, problem solving and critical thinking, will be treated as separate capabilities or combined under the umbrella of creativity.

Design Principle 7: Empower students to develop self-efficacy.

Empower students to develop a sense of agency about their capacity to be creative thinkers, learners, makers and researchers, and to develop their own creative vision and voice.

Design Principle 8: Fostering creativity involves a whole of person approach.

Develop students' and tutors' awareness of the affective dimensions of creativity and the expected emotional phases of the process. Provide guidelines for critique and reflection that promote a climate of mutual trust and confidence in peer-to-peer and student-to-teacher collaborations.

Design Principle 9: Provide leadership and guidelines for creative groups.

The role of group leader is a critical success factor in creative groups. This is particularly important in virtual environments, and applies to student led groups and classes led by tutors. The technologies used, team dynamics and the contribution and motivation of individuals will impact creative outcomes.

Design Principle 10: Creativity and teaching excellence are related.

Creative teachers nurture and empower students to be creative in their field and to strive for more than mere reproduction. Creativity entails hard work, challenge and going beyond the first answer. To foster creativity lead by example, adopt a facilitative teaching style, and engage in personal reflection in and on action (Schon, 2011). Promote a creative ecology by noticing and supporting relationships between students, teachers and the environment.

8.7.3 Technology

Design Principle 11: Reframe technological constraints as opportunities to challenge assumptions and design for creativity.

Proactively evaluate technologies for their disruptive and/or positive impact. Use the technologies, analogue and digital, that best meet creative need. Allow tutors and students time to adjust to and exploit new virtual environments, to build trust, community and a generative space. Creative leadership and mentoring style are critical in online spaces, and how individual students use the platform (e.g. LMS) and associated social media and other digital technologies will differ, and differently influence creative output.

8.7.4 Professional Development

Design Principle 12: Strengthen creative leadership and support a climate of creativity.

It is not enough to expect academics or students to "be creative". Given the paradoxical nature of creativity, the complexity of technology-enhanced learning environments in higher education, and the known difficulties of embedding graduate attributes into the curriculum, provide resources for professional development, development of new patterns of creative engagement, and support for creative leadership. Models listed in Table 5.1 provide useful heuristics for building a climate of creativity within the organisation. The National Graduate Attributes Project (GAP) (2009) implementation framework also provides relevant support.

8.8 IMPLICATIONS OF THE FINDINGS

This research has implications for researchers, educational practitioners, students and higher education institutions. For researchers, this study demonstrates that despite its complexities, creativity in higher education can be researched like any other abstract phenomenon. Although I operated on the premise that it was not possible to find one definition of creativity that suited all contexts and purposes, it was still possible to define the parameters for the study and to observe and gather meaningful data about creative teaching, and teaching for creativity, for analysis.

Consideration of the whole research process has confirmed for me that research and creativity are interrelated: research is a creative process. The implication of this is that researchers, including higher degree research students, be invited to engage in conversations about research as a creative pursuit, to understand the stages of the process and the related emotional factors so as to better manage the process. Figure 8.2 illustrates my own research as creative process. Using the visual design patterns employed for the case studies, the stages were as follows: (1) problem finding, (2) problem definition, (3) research design (exploring methodologies), (4) definition of the research design, (5) conduct of the research, (6) data analysis, (7) theory building, (8) peer review, and (9) dissemination. Note the recursive processes within each stage (see right hand column), and in particular the iterative processes indicated between stages 4 and 6, 5 and 6, 6 and 7 (see Figure 8.2). As with the other learning designs depicted in this research, the role of mentors is significant: in this instance the role was assumed by my supervisors (as researchers) (see Figure 8.2).

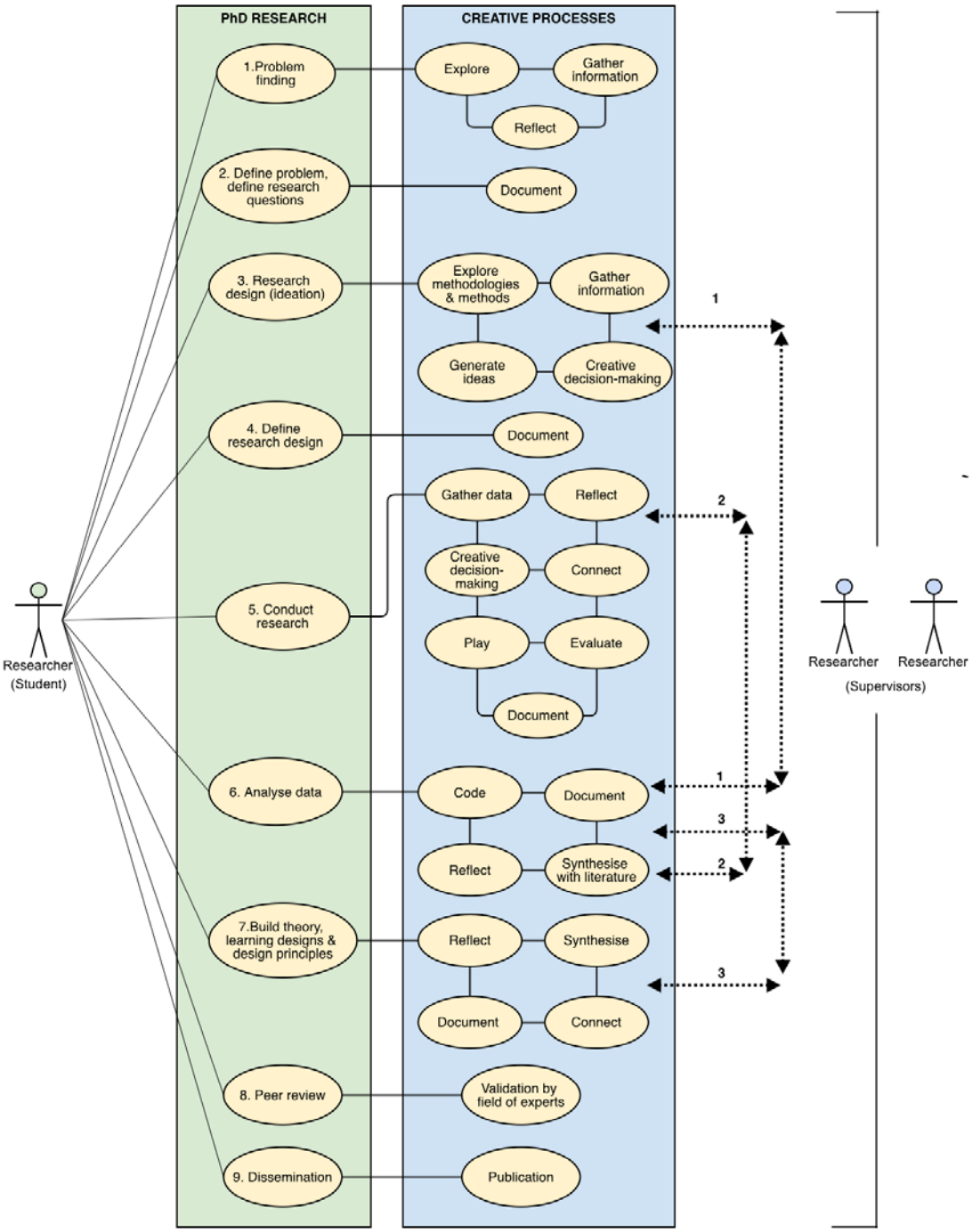

Figure 8.2. The creative process of PhD research.

Note: (1) is the recursive process between stages 4 and 6 (definition of the research process and analysis of data); (2) is the recursive process between 5 and 6 (conduct of research and analysis); and (3) is between 6 and 7 (analysis of data and theory building, learning designs and design principles).

The findings demonstrate that creativity can be encouraged and located in units that do not explicitly identify the capability within curricula (e.g. cases 3 and 5), and therefore with support and mentoring those educators who find difficulties in transforming their creative vision into practice, especially within rich-media and virtual environments, can build on the findings and case studies located here. The learning designs and design principles articulated here also provide a bridge between theory and practice.

If universities value creativity, as statements of graduate attributes proclaim, then it is important to develop a climate of creativity that supports educators, and rewards and acknowledges risk taking (see Table 5.1). This has ramifications for assessment policies, standards and accountability regimens. Analytic modes of thinking have for some time been privileged over creative academic ontologies, and creative problem finding and problem solving will be required to reframe issues in this area.

As this study confirmed that creativity could be fostered in completely online environments, implications follow for curriculum development. The demand for online enrolment and delivery will continue to grow in response to strategic, economic and political institutional imperatives, and as employees in the workplace are required to conduct business in virtual teams where the focus is a creative one (Chamakiotis et al., 2013). Increasingly the ability to offer courses that directly support creative outcomes will become a priority. Lessons learned from this study may also inform choice and deployment of new technologies for the purposes of embedding creative learning outcomes in TEL environments.

8.9 CONTRIBUTION TO THEORY

This study contributes significantly to the illumination of theory around designing for and fostering creativity in higher education. Creativity has been confirmed by teachers and students as a second generation capability that *can* be developed. The study identified differences in disciplinary approaches to the concept of creativity, and uncovered a relationship between concepts of teaching and concepts of creativity. The value of creativity to educators in higher education was confirmed, but its status confounded by disciplinary cultures, which may or may not position creativity as a core value. The study identifies creativity as a key

constitutive element of learning *and* of teaching. Significantly, creative thinking, a component of creativity, was found to be poorly differentiated from critical thinking and problem solving in curricula, with implications for those aiming to embed these generic capabilities. The research confirms findings of previous quantitative studies focused on creativity in higher education (Fryer, 2006a; McWilliam & Dawson, 2007); a notable exception being the greater value respondents in this research placed on creative *product* compared with earlier studies. In addition, the earlier research did not investigate the significant contextual impact of technology-enhanced learning environments on creative pedagogical intentions and praxis, whereas this study contributes theoretical insights into issues relating to self-efficacy and perceptions of digital technologies as barriers to creativity.

Further contributions to theory include the case study findings regarding praxis, exemplified by creative practitioners and their tutors, and deepened with perspectives from students. These theoretical outcomes have been encapsulated in the key findings (sections 8.3 to 8.6) and the design principles (section 8.7). The study has also made a theoretical contribution to the field of professional development and the graduate capabilities agenda.

The findings around the creative elements that can be expressed through learning designs as process models are an important contribution to theory. This includes the case studies as exemplars, and the pedagogical patterns and visual models. These various forms of learning design provide illumination of creative pedagogical practice and epistemology, and confirm the efficacy of a structured, well facilitated approach to creativity in the arts and the social sciences which allows for maximum freedom within defined parameters. The visual representations of learning designs (Figures 6.2 to 6.6) are original models of creative process, learner and peer engagement and teaching support, and are distinct from earlier learning design models.

Other models within this research that make an original contribution to theory include the model of habits of creativity (Figure 7.2), the pathways to creativity (Figure 7.3), the learning and teaching perspective on fostering creativity (Figure 7.4), and the research as creativity model (Figure 8.2). Importantly, the ecological model of creativity as a system (Figure 8.1) emphasises the interconnectedness of the elements and relationships that contribute to designing for creativity.

8.10 CONTRIBUTION TO PRACTICE

As well as contributing to theory, the learning designs (as *artefacts*) contribute new pedagogical patterns for practitioners to adapt and experiment with. Learning designs as artefacts are seldom produced in two forms. The two new models derived from this research, in visual and text-based forms, make an original contribution to practice in that their focus is on creative processes. They illustrate a sequence of activities that constitute one or more creative tasks, indicate where creative processes occur in those patterns and what the creative processes are likely to be. Rather than privileging *tasks*, *resources* and *supports*, as learning design patterns traditionally do, the visual patterns privilege creative process. The accompanying text-based pattern provides the necessary additional information for implementation in practice. The learning designs are from different disciplines and represent five different pedagogical patterns, namely: a peer review activity for creative writing workshops; a problem finding to proof of concept web design activity; a scaffolded creative inquiry for sociology; a reflective concept journal for digital imaging; and a role play for architecture.

Similarly, the case study narratives representing learning *process* and the twelve design principles contribute adaptable models and guidelines that higher education practitioners can modify. The cases, designs and principles provide the starting point for further debate about what it means to be a creative practitioner in higher education, helping to bridge the gap between theory and practice. In addition, the research itself has contributed to practice by raising the issue of creativity with participants and thereby contributing to the current discourse on creativity and reflection in and on practice.

8.11 CONTRIBUTION TO METHODOLOGY

The efficacy of the new methodological approach, *informed grounded theory* (Thornberg, 2012), was tested in practice and confirmed as a suitable approach for mixed methods research. The integration of a literature review early in the study reduced the risk of unintentional repetition of previous studies, and increased theoretical sensitivity to the data as outlined in section 3.4.2, without compromising the analysis process. By systematically employing informed grounded theory methods to the qualitative data coding of the survey, I was able to realise a deep, rich

and nuanced analysis of both the qualitative data and the quantitative data. The surprising volume of comments accompanying many of the survey questions greatly aided interpretation of the quantitative findings when coded and analysed in this way. Further, by adopting an approach of "theoretical pluralism" (Thornberg, 2012, p. 250), use of many theoretical positions, I was able to challenge and critique from multiple perspectives, while remaining "theoretically agnostic" (p. 250), that is, critical and cautious about extant theories whilst developing my own original theories from the new data. Coincidentally, informed grounded theory encourages "theoretical playfulness" (p. 253), that is, being creative and playful with theorising. This openness to imaginative connection-making, in addition to systematic analytical critique was particularly apt for a study of creativity. Consequently, wherever possible I have tried to demonstrate "theoretical playfulness" in my research approach and voice.

Informed grounded theory methods also worked well with the qualitative case study data. The deep and rich analysis that resulted was strengthened by my insistence on maintaining individual in-depth narratives for the case studies. This combined use of informed grounded theory, narrative and case study approaches was an important variant on a relatively new methodology (informed grounded theory). The narratives helped preserve the integrity of the cases, and this would have been lost in the process of fracturing the data using grounded theory methods alone.

This study confirms the value of a mixed methods approach for educational research, especially where a complex abstraction such as creativity is the focus of the inquiry. The triangulation of methods provided new insights, points of comparison and alternative perspectives from the separate data sets. This was useful for the development of theory and for challenging assumptions across data sets. Separating out single elements for research in education is problematic because of the confounding effect of context. Working with two rich data sets enabled a clearer picture to emerge regarding practitioners' conceptions about creativity and its place in higher education learning and teaching.

Further, the creative processes depicted in the learning design models (Figures 6.2, 6.3, 6.4, 6.5 and 6.6) make an original contribution to learning design pattern methodology. This was explained in section 8.9, but further to that, this new model provides a method of representing creative process, and making tacit practice around

creativity explicit and discoverable. The stages where interaction between the individual, the teacher/tutor and peers occur are also made explicit in the model. The learning designs in visual format focus on what the student does, whereas other learning designs often affirm a student centred approach but represent the learning design from a teaching focus. Combined with the text-based models provided in Appendix I the learning designs present a dual method for capturing creative processes within learning activities, representing the student perspective and the teaching perspective.

8.12 LIMITATIONS OF THE RESEARCH

There are four areas where limitations of the research were noted: firstly, the issue of the sole researcher. Analysis conducted by a sole researcher has expected limitations in that another researcher has not forensically checked the accuracy and appropriateness of coding and categories, the construction of narratives, conclusions and theory emergent from the data. However, every effort has been made in this research to maintain consistency and rigor in the collection, analysis and synthesis of data. At all stages the research was reviewed and discussed with my two supervisors, and the quality indicators as set out in section 3.3.3 (fit, relevance, workability and modifiability) were attended to. In addition, two review panels provided critical review of the research: one at confirmation and the other at the final seminar.

With regard to the survey, while a certain level of generalisation was possible from the data, caution needs to be exercised in drawing conclusions, given that the population in the convenience sample was representative in the main of the creative industries, arts, humanities and social sciences. In addition, as with all surveys, the questions asked of participants were derived from my own (the investigator's) frame of reference and life experience, reflecting the subjectivity of data gathering methods and analysis. In assessing the findings of the survey, therefore, this reading must be taken into account. This does not mean, however, that the research is any less rigorous, systematic or well documented than expected.

Another limitation of the survey was that participants' responses were self-reported and could not be verified. However, triangulation of the survey data with case study data strengthened the overall veracity of the conclusions drawn. The survey was designed to elicit the opinions and perspectives of participants at a

particular point in time, and the data provided as accurate a snapshot of those perceptions as possible, in that context.

A limitation regarding the case studies was that participants were recruited only from the creative industries and the social sciences. Although the original intention had been to recruit a science, engineering or mathematics example for the multi-case set, this was not possible for logistical reasons. Nonetheless, the cases provided contrast and met the selection criteria set out in Table 3.1; they represented a range of disciplines and included diversity of pedagogical approach, content, context and delivery mode, and reflected similar discipline groupings to those that predominated in the survey.

The final identifiable limitation of the research is that although the design principles were derived from practice they were not tested in practice. However, this additional step was beyond the scope of the study and inconsistent with the chosen methodology, as explained in section 3.4.3.

8.13 FUTURE RESEARCH

It is recommended that further research be conducted into the work of creative practitioners, as more evidence from case studies in other disciplines (e.g. the sciences) will contribute to theory and benefit the conceptual and empirical basis on which practice is based. As educators deal with the tensions that arise between those calling for more standardisation and accountability in the curriculum as those who desire more creative curricula, these cases become even more relevant.

This research has barely touched on the issue of distinctions between creative thinking, critical thinking and problem solving, and the degree to which other cognitive processes are distinct from or constitutive of creativity. This area warrants further investigation to help practitioners more clearly articulate assessment requirements and pedagogical design, and successfully embed generic graduate attributes.

Cross-cultural research into creativity would also be beneficial as all cultures and pedagogical settings conceive and construct creativity differently. While this study has captured the views of some students regarding their experience of being creative, the literature is nascent and further research into the student experience would benefit practitioners and policy makers.

In addition, further research is warranted into the technology-enhanced learning environment of higher education that impacts the development of creative pedagogies. This could include the perspectives of both teachers and students, and further exploration of how creative pedagogical approaches shape technological requirements. The use and non-use of digital networks by students to further their creative practice is also worthy of deeper investigation. Research that challenged assumptions about the use of social networks and the depth and type of interactions as they relate to creativity would be timely. Finally, there is still more to be learnt about the relationships and activities of students in creative groups, especially in online, virtual spaces where the interaction spaces evolve with the technologies.

As the design principles derived from this research were not tested in practice, a useful program of applied research could be designed around testing the principles, putting theory into practice. Also, the efficacy and usefulness of the new learning design patterns, which demonstrate iterative creative processes, could also be tested in practice.

8.14 CONCLUSION

This inquiry set out to determine how to foster and design for creativity in higher education. The study provided clear examples and evidence that creativity can be designed for in standard university classrooms (offline) and in virtual classrooms (online). Exemplary practitioners have much to offer the sector in term of models, patterns and approaches to being creative. Their energy and enthusiasm for teaching matches their motivation for creativity in life; they are able to translate lessons learned from creative approaches in their discipline into creative approaches to learning and teaching. Their approach to education is creative and design-based. They know that finding room for play in the curriculum is a serious method of designing for creativity.

There is no one way to express creativity, or to approach it theoretically or pedagogically; and context, purpose, technologies and disciplinary culture will affect outcomes. Teaching creatively and teaching for creativity have relevance for courses beyond the arts, humanities and creative industries. Fostering creativity can enrich students' and teachers' lives, and potentially lead to social renewal and transformation. While there are many lessons to be learnt from this study, one in

particular stands out, and that is the headlights principle. Avoid being caught in the creativity headlights. If you get caught in the glare it can be paralysing. A creative teacher, however, knows how to supply sufficient light to illuminate a pathway for themselves and their students, so that with imagination and energy, students and teachers can creatively learn, and learn to be creative.

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APPENDICES

APPENDIX A: GRADUATE CAPABILITIES

A sample of generic undergraduate capabilities (attributes) gathered from selected Australian University websites (April 2014) that reference creativity in some form.

Source	Description
Australian Catholic University (national)	Knowledgeable and able to think critically and reflectively; demonstrate values, knowledge, skills and attitudes appropriate to the discipline and/or profession; solve problems in a variety of settings taking local and international perspectives into account.
Charles Darwin University (NT)	Personal, practical knowledge–Creativity: Can conceive of imaginative and innovative responses to future orientated challenges and research.
Charles Sturt University (NSW)	Effective communicators who have problem-solving, analytical and critical thinking skills and can work both independently and in teams.
Curtin University (WA)	Curtin graduates demonstrate evidence, as appropriate to their disciplines, that they can: Think critically, creatively and reflectively.
Deakin University (Victoria)	Skills: critical analysis, problem solving, and creative thinking.
Edith Cowan University (WA)	ECU Graduates will be valued for their ability to generate ideas: having the courage and confidence to be creative and innovative.
Macquarie University (NSW)	Capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.
Melbourne University (Victoria)	Academic distinction: . . . Melbourne graduates are critical, creative thinkers with strong reasoning skills. They can apply knowledge, information and research skills to complex problems in a range of contexts and are effective oral and written communicators. The Melbourne educational experience prepares graduates to be entrepreneurial and innovative thought-leaders . . . They are adept lifelong learners who generate bold and novel ideas by critically evaluating alternative possibilities and viewpoints.
Monash University (Victoria)	Critical and creative scholars who: a) produce innovative solutions to problems; b) apply research skills to a range of challenges; c) communicate perceptively and effectively.
Notre Dame University (WA & NSW)	Critical and reflective thinking: The ability to be a reflective practitioner with sound decision making abilities, through the use of clear, critical and creative thinking and effective problem solving skills.
RMIT (Victoria)	Graduates of RMIT University will have had the opportunity to develop creative and innovative ways of knowing, thinking and doing, using critically reflective and transformative approaches to generate new ideas, artefacts, products, interpretations or ways of viewing professional projects and tasks.

Source	Description
Queensland University of Technology (QLD)	Critical, creative and analytical thinking, and effective problem-solving including: the ability to critique current paradigms and contribute to intellectual inquiry; the capacity to exhibit creative as well as analytical ways of thinking about questions in at least one discipline; the ability to identify, define and solve problems in at least one discipline area.
Southern Cross University (NSW)	Graduate Attribute 2, Creativity: an ability to develop creative and effective responses to intellectual, professional and social challenges.
University of Adelaide (SA)	An ability to apply effective, creative and innovative solutions, both independently and cooperatively, to current and future problems.
University of New South Wales (NSW)	UNSW graduates will be scholars who are . . . able to apply their knowledge and skills to solving problems; . . . and leaders who are enterprising, innovative and creative; capable of initiating as well as embracing change; collaborative team workers
University of Queensland (QLD)	Independence and creativity . . . The ability to generate ideas and adapt innovatively to changing environments; The ability to identify problems, create solutions, innovate and improve current practices.
University of Sydney (NSW)	The 5 second level graduate attributes are divided into discipline specific attributes, e.g. Engineering, under Personal and Intellectual Autonomy includes: 'An appreciation for the role of creative thinking within engineering and the ability to undertake and indulge in the process of it'. Arts and Social Science, under the category of research and inquiry expect students to: 'think independently, analytically and creatively'.
University of Tasmania (Tasmania)	'Problem-solving skills: Graduates will be effective problem-solvers, capable of applying logical, critical and creative thinking to a range of problems. '
University of Western Australia (WA)	'To develop disciplinary and interdisciplinary knowledge and skills through study and research-based enquiry, at internationally recognised levels of excellence . . . to think, reason and analyse logically and creatively

APPENDIX B: TIMELINE FOR THE RESEARCH PROCESS

Stage 1 (20 June 2011 – Jan 2012): Planning and ethics
20 June 2011: Research commenced.
19 Sept 2011: Stage 2 document submitted for PhD candidacy, preliminary research design, initial literature review and document search of university websites; context established.
Dec 2011 – Jan 2012: Ethics application submission and approval; construction of survey, case study and group interview questions and instruments.
Stage 2 (Feb 2012 – Dec 2013): Data collection, preliminary analysis and theory generation
Feb 2012 -Dec 2013: Ongoing literature review.
March-April 2012: Data gathering; online survey implemented.
April – July 2012: Preliminary data analysis of online survey.
4 July 2012: Presentation of research at ASPERA national conference.
12 July 2012: QUT confirmation report submitted and seminar presentation.
July 2012 – July 2013: Case study recruitment.
Dec 2012 – Dec 2013: Case study data collection (cases 1-5); interviews and field research.
Jan 2012 – Dec 2013: Note taking, memoing, analysis and preliminary construction of theory.
4 July 2013: Presentation of paper based on literature review at HERDSA conference. (Award received)
July 2013 – Dec 2013: Qualitative data coding of survey data and cases; case narratives; initial chapters drafted.
October 2013: Presentation at IGNITE13!, QUT, postgraduate research students' conference.
Stage 3 (Jan 2014 – Nov 2014): Analysis, theory generation and chapter writing
Jan-Sept 2014: Literature review refined with synthesis of findings and analysis.
Jan-Aug 2014: Data analysis, theory building, synthesis and evaluation; learning designs and learning principles devised.
July 2014: Near final thesis draft completed and distributed to review panel.
August 2014: Final seminar–presentation to panel and public audience.
Sept-Nov 2014: Final editing and amendments following feedback from panel
November 2014: Thesis submitted for examination.

APPENDIX C: SURVEY QUESTIONS

Designing for Creativity in Technology-Mediated Learning Environments
Queensland University of Technology Ethics Approval Number 1100001543

The aim of this research is to investigate how creativity can be fostered in courses designed for higher education students. The survey is anonymous and should take you about 10-15 minutes to complete. Most of the questions are tick-the-box or scaled questions. You can exit the survey at any time without comment or penalty. By clicking on NEXT and entering the survey, you consent to voluntarily participate in the research, having been informed about the conditions of participation.

To review the participation information, click here.

If you have any questions or need further information, please contact the research team listed on the participant information sheet. Thank you for helping with this research. Please click on NEXT to commence the survey.

Creativity as a concept

1. How would you define 'creativity'? What does it mean to you?

   (We anticipate a diverse range of responses to this question so please don't feel pressured to respond in a particular way. You can return to this question later if you want to change your answer - just use the 'next' and 'previous' buttons to move through the survey.)

The value of creativity

2. Please indicate your agreement or disagreement with the following statements.

   (1 = Don't agree at all; 5 = Agree completely) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

   (a) I think it's important that students develop their creativity as part of their academic skill set.

   (b) I think it's important that students develop their creativity in order to find employment.

   (c) I think it's important that students develop their creativity as a general life skill.

If you'd like to comment on the above questions, please do so here.

3. Please indicate your agreement or disagreement with the following statements.
   (1 = Don't agree at all; 5 = Agree completely) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

   (a) I think that the development of creativity is valued by my department or centre.

   (b) I think that the development of creativity is valued by my university.

   (c) I think that the development of creativity is valued by the students I work with.

Creativity, learning and teaching

4. Many universities aim to promote creativity in their students. If you are not actively engaged in promoting student creativity, or unable to do so, what would you say are the main reasons for this? (Check as many as apply.)

   If this question does not apply to you, click 'not applicable' at the bottom, and go to the next question.

   ☐ The subject matter of my units or courses does not require students to be creative.

   ☐ It is not my role or responsibility to make changes to the curriculum.

   ☐ I do not have the support I need to make the changes I would like.

   ☐ I do not have the conditions to implement the changes I would like.

   ☐ I do not have enough time to change the curriculum.

   ☐ I do not have the technology to make the changes I would like.

   ☐ I do not have sufficient skills to use the technology I need to promote student creativity.

   ☐ Not applicable - I can promote creativity in my context.

   Other (please specify)

5. If you are able to promote student creativity, how do you go about doing this? You may like to give one or two examples. (Skip this question if it is not applicable.)

6. Please indicate your agreement or disagreement with the following statements.

   (1 = Don't agree at all; 5 = Agree completely) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

   (a) I think creativity can be taught.

   (b) I think you can set up the conditions for developing students' creativity.

   (c) I think you can design courses that lead to creative learning outcomes for students.

   (d) In the process of encouraging student learning, I don't necessarily distinguish creative thinking from problem solving.

   (e) In the process of encouraging student learning, I don't necessarily distinguish creative thinking from problem solving.

If you'd like to comment on the above questions, please do so here.

7. If you think creativity can be promoted by setting up the right conditions or by designing courses that lead to creative outcomes, please answer the follow questions. Otherwise skip this question and go to the next question.
(1 = Don't agree at all; 5 = Agree completely)

(a) I know how to set up the conditions for developing students' creativity.
(b) I know how to design a unit or course that encourages student creativity.
(c) I have the technology I need to promote student creativity.
(d) I have sufficient skills to use the technology I need to promote student creativity.

If you'd like to comment on the above questions, please do so here.

8. Please indicate your agreement or disagreement with the following statements.

(1 = Don't agree at all; 5 = Agree completely, Not applicable)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Not applicable

(a) In my professional environment, I have the conditions and the scope to be a creative educator.

(b) In my professional environment, I have the conditions and the scope to support creative learning and teaching.

(c) Students in my units or courses have the conditions and scope to demonstrate their creativity.

(d) I think that creativity can only be encouraged and supported if class sizes are kept small.

If you'd like to comment on the above questions, please do so here.

Creativity and technology

9. Do you teach, support, manage, research, or design courses for students in any of the following modes? (Select as many as apply.)
☐ On-campus – supporting students mostly in face to face classes
☐ Distance and/or online - supporting off-campus students
☐ Blended learning – combining face to face teaching methods with substantial use of online technologies.
☐ Other (please specify) _____

10. Please indicate your agreement or disagreement with the following statements.
(1 = Don't agree at all; 5 = Agree completely) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
(a) I think that it is easy to foster students' creativity in the context of face to face learning

(b) I think that it is easy to foster students' creativity in the context of online learning.

(c) I think that it is easy to foster students' creativity in the context of blended learning (online mixed with face to face).

(c) I think that it is easy to foster students' creativity with the support of a learning management system (e.g. with Blackboard, Moodle, Desire2Learn, Sakai, WebCT)

If you'd like to comment on the above questions, please do so here.

11. Please indicate your agreement or disagreement with the following statements.
(1 = Don't agree at all; 5 = Agree completely) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

(a) I think creativity can be encouraged and supported only where class sizes are kept small.

(b) I think networks of peers and mentors play an important role in the development of student creativity.

Please comment. You may like to give an example to illustrate your point of view.

12. Please indicate your agreement or disagreement with the following statements.
(1 = Don't agree at all; 5 = Agree completely) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

a) In order to foster student creativity, I think the most important thing is to get the learning and teaching strategies right.

(b) In order to foster student creativity, I think the most important thing is to get the conditions and context right.

(c) In order to foster student creativity, I think the most important thing is to get the technology right.

If you'd like to comment on the above questions, please do so here.

About you

13. Are you male or female?
14. Please indicate your age.

18-24 25-34 35-44 45-54 55+

15. At which university do you work?

    University 1 _____ University 2_____

16. In what discipline(s) or department(s) do you mostly teach, manage, lead or support learning and teaching? (e.g. engineering, photography, music, business, etc.)
    _____
17. At what level(s) do you teach or support learning and teaching? (Select as many as apply)

    ☐ Undergraduate

    ☐ Postgraduate (course work)

    ☐ Postgraduate (higher degree by research)

18. For how many years have you been teaching, supporting, leading or managing units or courses in universities? _____

19. For how many years have you been using the Internet in the process of designing or teaching courses for higher education? _____

20. On what basis are you employed?
    ☐ Casual ☐ Part time ☐ Full time ☐ Consultant or freelance

21. Please select your title you use at your university

    Tutor/Associate Lecturer/Lecturer/Senior Lecturer/Associate Prof/Adjunct Prof/Educational Designer-Developer/Academic Developer/Consultant

    ☐ University 1 ☐ University 2

22. What is your main role at the university?

    Teaching/Staff, curriculum or educational development/Educational leadership/Research/Consultancy or project work

    ☐ University 1 ☐ University 2

Thank you for completing the survey!

An invitation

We are looking for outstanding examples of innovative practice for the next stage of the research. If you have, or someone you know has interesting and effective methods for encouraging students to 'be creative', please leave your details below and we will contact you. We are particularly interested in higher education examples where new technologies are used to support teachers' and students' creativity. If your example becomes one of the case studies, the details can be summarised, and used as evidence of exemplary practice for your personal teaching portfolio, or for promotion purposes. Your contact details will not be linked with your survey responses.

23. Please check as relevant

    ☐ Please put me in the draw for a $40 iTunes gift voucher.

    ☐ Please send me a summary fact sheet of the survey findings.

    ☐ I would like to be contacted to provide an example of innovative practice.

24. Contact details: Name _____ Email address _____

APPENDIX D: SURVEY FACT SHEET

Queensland University of Technology
Brisbane Australia

FACT SHEET

Summary results from the online survey

'Designing for creativity in technology-enhanced learning environments in higher education' QUT Ethics Approval Number 1100001543

RESEARCH TEAM

Principal Researcher: Ms Robyn Philip, PhD candidate, QUT, Brisbane, Australia
Supervisors: Dr Ruth Bridgstock and Dr Shaun Nykvist, QUT, Brisbane, Australia

WHAT IS THIS FACT SHEET ABOUT?

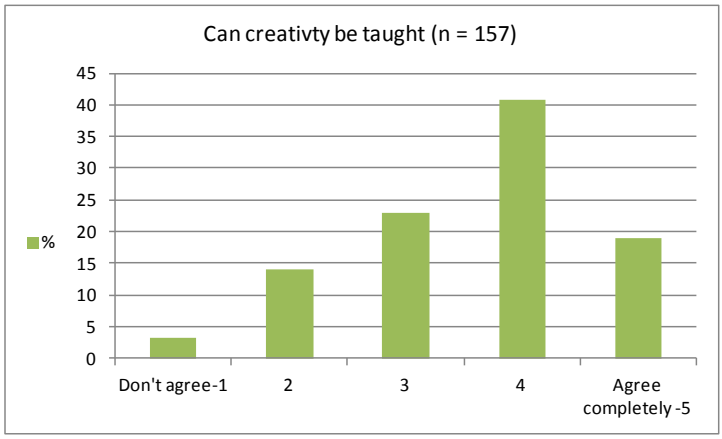
Thank you for responding to the survey: 'In the zone: A survey about creativity, technology, and the design of learning' in 2012. The purpose of the survey was to gather data about the value that teachers place on creativity, whether it is possible to teach, foster and/or designing for creativity, and perceptions about the impact of information and communications technologies in this context.

In responding to the survey you indicated that you'd like to receive a fact sheet once results became available, so a summary is provided here for you.

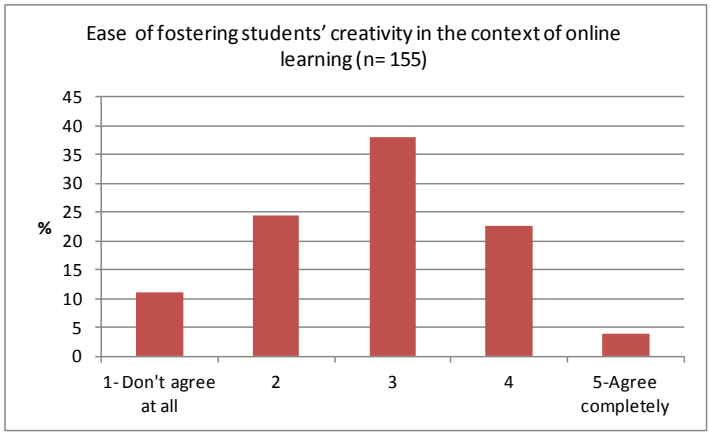
The survey sample was a convenience sample and part of a mixed methods approach to the research. The findings will be combined with qualitative case study data in the final analysis.

WHAT DID THE FINDINGS INDICATE?

1. 170 participants from higher education responded to the survey. More than half were female (53%), 37% male, and 82% were 35 years or older. The greatest number of respondents (36%) was in the 45-54 year age bracket.
2. The majority of respondents were drawn from humanities, arts and creative industry faculties (31%); 17% from support areas such as academic and educational development and learning support; 12% from faculties of education; 11% from science, mathematics, statistics, engineering or IT; 9% from health sciences and medicine; and 7% from law and business.
3. Participants were clearly experienced in teaching, managing and leading education, as the mean number of years in any of these roles was 12.5 years, with a standard deviation of 8.3 years, the highest frequencies being 10 and 20 years.
4. Participants were asked what they understood by the term 'creativity'. Responses were diverse, and included notions of aesthetic expression, novelty, flexibility, problem solving, making connections and responding to one's environment. For example:
    - *Creativity, for me, involves a degree of other-worldliness, of storytelling and giving birth to something which is unexpected and beautiful, not just something new.'*
    - *'I see creativity as a way of interacting and responding to one's environment - in a way this is unbounded by conventional thinking, i.e. free to explore and extend current known horizons.'*
    - *'The ability to look at a situation or a problem and to come up with an appropriate, engaging solution.'*
5. In answer to the question about whether or not creativity can be taught, on a 5 point Likert scale, 41% (64) agreed that it could be taught. (Mean 3.59; SD 1.05). Comments ranged across the spectrum, e.g.:
    - *'You can teach students to ask new questions or take new perspectives.'*
    - *As mentioned earlier I strongly believe that we cannot "teach" people to be creative, but we can help them to gain knowledge, experience, passion etc.'*
    - *'Depends on one's definition of 'teaching'. e.g. 'direct instruction' probably wouldn't work.*



6. In answer to the question 'I know how to design a unit or course that encourages student creativity', 50% (77) agreed with the statement. (Mean 3.69; SD 0.97 on a 5 point Likert scale). Representative comments included:
   - *'Depends on the student...some have a very low base point.'*
   - *'I think designing the course has more to do with knowledge of your students cognitive history. If you ask someone to create something that they have already done before they will most likely not be creating but recalling.'*
7. With regard to how easy (or not) it is to foster creativity in different contexts in which creativity might be fostered, the results indicate that face-to-face and blended modes are generally perceived to be easier contexts for this purpose (means 3.70 and 3.37 respectively; SD: 1.04 and 1.02). The online context, especially where the use of a learning management system is required, produced lower mean responses (means 2.84 and 2.78 respectively; SD: 1.02 and 1.09 on a 5 point Likert scale). Comments included, e.g.:
   - *'LMS are deeply unsuited to creativity for so many reasons I can't go into them.'*
   - *'Again it is not about technology. It is about creating [an] environment for creative study.'*



Thank you for helping with this research project.

Robyn Philip, March 2013

QUESTIONS / FURTHER INFORMATION ABOUT THE PROJECT

If you have any questions or require any further information please contact one of the research team members below.

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APPENDIX E: INTERVIEW QUESTIONS

(E1) Teaching perspective: Questions with prompts

1. *Terminology* (creativity or other): Do you ask your students to 'be creative' in your unit of study? Do you use these words or some other terminology?

2. *Motivation*: Why do you want students to be creative (or innovative or think differently or in new and novel ways)?
   a) Is it important for you to take a creative approach to your teaching? Why?
   b) Is it important for your students to be creative? Why?
   c) Does creativity need to be expressed in a particular way in your discipline? Why is that?
   d) What do you get out of teaching this way? (any rewards? Department, faculty and university, government ?)

3. Expectations of students:
   a) What do you expect of students when you ask them to 'be creative' (or similar)?
   b) Do you think students can learn to be creative, or develop their creativity?

      - Is it a question of being 'taught'? Or the right tools? Or improving their thinking skills?
      - Or do you think it is an *approach* to tasks, learning or problem solving?
      - Or the right conditions?

4. *Example*: Can you describe one or more creative activities that you have designed for students?
   a) What approach did you use? Why did you do things this way? What was your thinking behind this approach? (personal teaching style, external factors = uni, dept, discipline, unit requirements, other?)
   b) How do you go about doing this? (e.g. : modelling, scaffolding, peer review, providing extra time, allowing students to make mistakes, opportunities to frame and reframe the question, reflection, rewarding creativity, opportunities to develop language and a vocabulary to express ideas)
   c) What approaches or strategies are most successful for you?

5. *Issues*: What problems or issues did you encounter?
   a) How did you overcome these problems? (e.g. time, student resistance? Fit with timetable?)
   b) Do you have any suggestions for others who may want to try this approach?

Student response

6. Student perspective: How did students to respond to these activities?
   a) How effective are these approaches for your students? (any evaluations?)
   b) Under what conditions do you think your students are most creative?
   c) Are there any factors that prevent you from encouraging your students to be more creative?

Technology

7. Technology: What is the role of technology in these activities? Does it have an impact do you think?
   a) Did any technologies provide you and your students with support for the creative process? Why or how was that?

b) Did any of the tools (ICTs, social media, networking technologies, LMS) present barriers or limitations to what you wanted to achieve? How or why was that?
c) (If not already taught online) If you were asked to offer this activity/course online – do you think you could still be creative? Could you still encourage students as you do now?

Other data

8. Documentation: Would you like to share any of your learning designs for these activities? (lesson plans, assessments and teaching strategies)

Final comments

9. Are there any other comments you would like to make?

(E2) Student perspective: Questions with prompts

1. You've been invited to this focus group because you've attended a course where you're expected to demonstrate creativity in some form (relate to case studies). Can you describe one or more of these creative activities that you were asked to complete or participate in?
    a. Did this activity encourage you to be creative? How were you supported in this task? What approaches or strategies were the most successful for you? (e.g. modelling, mentoring, scaffolding, peer review, providing extra time, allowing students to make mistakes, opportunities to frame and reframe the question, reflection, rewarding creativity, opportunities to develop language and a vocabulary to express ideas)
    b. Did you work best on your own or in groups? Why was this?

2. How would you describe or define creativity? What does it mean to "be creative"?
    a. Do you think creativity can be taught, or do you think it is more about setting up the conditions for encouraging and supporting creativity?
    b. Do you think encouraging creativity is important? Why?
    c. Under what conditions do you think you can be most creative? Do you need support networks or mentors to be creative?

3. What role did the technology play in these activities?
    a. How did it help the process? Did it limit what you could do? Did the learning management system (Blackboard, Moodle, WebCT, other) help you in your efforts to be creative, or did you find other technology tools to support you? Did you rely on outside networks to help you in your creative tasks?

4. What problems, if any, did you encounter?
    a. How did you overcome these problems? Do you have any suggestions for others trying the same thing?

5. What do you get out of learning this way? (rewards)
    a. Do you feel that you are given sufficient support to express your creativity?
    b. Do any technologies help or hinder with this?

6. Are there any other comments you would like to make?

APPENDIX F: ETHICS APPROVAL AND INTERVIEW PARTICIPANT INFORMATION CONSENT FORMS

University Human Research Ethics Committee

HUMAN ETHICS APPROVAL CERTIFICATE

NHMRC Registered Committee Number EC00171

Date of Issue: 19/3/14 (supersedes all previously issued certificates)

Dear Ms Robyn Philip

A UHREC should clearly communicate its decisions about a research proposal to the researcher and the final decision to approve or reject a proposal should be communicated to the researcher in writing. This Approval Certificate serves as your written notice that the proposal has met the requirements of the *National Statement on Research involving Human Participation* and has been approved on that basis. You are therefore authorised to commence activities as outlined in your proposal application, subject to any specific and standard conditions detailed in this document.

Within this Approval Certificate are:

* Project Details
* Participant Details
* Conditions of Approval (Specific and Standard)

Researchers should report to the UHREC, via the Research Ethics Coordinator, events that might affect continued ethical acceptability of the project, including, but not limited to:

(a) serious or unexpected adverse effects on participants; and
(b) proposed significant changes in the conduct, the participant profile or the risks of the proposed research.

Further information regarding your ongoing obligations regarding human based research can be found via the Research Ethics website http://www.research.qut.edu.au/ethics/ or by contacting the Research Ethics Coordinator on 07 3138 2091 or ethicscontact@qut.edu.au

If any details within this Approval Certificate are incorrect please advise the Research Ethics Unit within 10 days of receipt of this certificate.

Project Details

Category of Approval:	Human Negligible-Low Risk		
Approved From:	12/01/2012	**Approved Until:**	12/01/2015 (subject to annual reports)
Approval Number:	1100001543		
Project Title:	Designing for creativity in technology-mediated learning environments in higher education		
Experiment Summary:	Investigate how creativity can be fostered in higher education students, particularly within elearning (technology-mediated) environments.		

Investigator Details

Chief Investigator: Ms Robyn Philip

Other Staff/Students:

Investigator Name	Type	Role
Dr Ruth Bridgstock	Internal	Supervisor
Dr Shaun Nykvist	Internal	Supervisor

Conditions of Approval

Specific Conditions of Approval:

University Human Research Ethics Committee

HUMAN ETHICS APPROVAL CERTIFICATE

NHMRC Registered Committee Number EC00171

Date of Issue: 19/3/14 (supersedes all previously issued certificates)

No special conditions placed on approval by the UHREC. Standard conditions apply.

Standard Conditions of Approval:
The University's standard conditions of approval require the research team to:

1. Conduct the project in accordance with University policy, NHMRC / AVCC guidelines and regulations, and the provisions of any relevant State / Territory or Commonwealth regulations or legislation;

2. Respond to the requests and instructions of the University Human Research Ethics Committee (UHREC);

3. Advise the Research Ethics Coordinator immediately if any complaints are made, or expressions of concern are raised, in relation to the project;

4. Suspend or modify the project if the risks to participants are found to be disproportionate to the benefits, and immediately advise the Research Ethics Coordinator of this action;

5. Stop any involvement of any participant if continuation of the research may be harmful to that person, and immediately advise the Research Ethics Coordinator of this action;

6. Advise the Research Ethics Coordinator of any unforeseen development or events that might affect the continued ethical acceptability of the project;

7. Report on the progress of the approved project at least annually, or at intervals determined by the Committee;

8. (Where the research is publicly or privately funded) publish the results of the project is such a way to permit scrutiny and contribute to public knowledge; and

9. Ensure that the results of the research are made available to the participants.

Modifying your Ethical Clearance:
Requests for variations must be made via submission of a Request for Variation to Existing Clearance Form (http://www.research.qut.edu.au/ethics/forms/hum/var/var.jsp) to the Research Ethics Coordinator. Minor changes will be assessed on a case by case basis.

It generally takes 7-14 days to process and notify the Chief Investigator of the outcome of a request for a variation.

Major changes, depending upon the nature of your request, may require submission of a new application.

Audits:
All active ethical clearances are subject to random audit by the UHREC, which will include the review of the signed consent forms for participants, whether any modifications / variations to the project have been approved, and the data storage arrangements.

End of Document

Queensland University of Technology
Brisbane Australia

PARTICIPANT INFORMATION FOR QUT RESEARCH PROJECT

– Interview and Case Study –

'Designing for creativity in technology-enhanced learning environments in higher education'

QUT Ethics Approval Number 1100001543

RESEARCH TEAM

Principal Researcher: Ms Robyn Philip, PhD student, Queensland University of Technology (QUT)

Associate Researchers: Dr Ruth Bridgstock and Dr Shaun Nykvist, QUT

DESCRIPTION

This project is being undertaken as part of a PhD study by Robyn Philip.

The purpose of this project is to investigate how creativity might be fostered in courses designed for higher education students. The aim is to look at methods and strategies that teachers use when they aim to encourage student creativity. The researchers will explore the conditions in which students can best develop their creative capacity, along with the role that networked, information and communications technologies play in this context.

You are invited to participate in this project if you teach in higher education, and have used innovative and creative approaches to learning and teaching that encourage students to be creative, and to develop their creative capacity. If you have adopted some of these sorts of strategies and methods in the context of face to face classroom teaching which makes a special use of learning technologies, or in the context of online and web-supported teaching, we are particularly interested in talking to you.

PARTICIPATION

Your participation in the research is entirely voluntary. If you agree to participate, you will be asked to respond to questions about your teaching in an hour-long interview with the principal researcher. This may take place at an agreed location, or via phone or teleconference. You will be asked if you would like to share examples of your innovations and teaching methods which relate to creative approaches (documents such as lesson plans, assessments and activities), and/or agree to classroom observation where these plans are put into action.

With your consent, the interview will be audio recorded and notes taken by the principal researcher. Indicative questions asked are: Why do you think creative activities are important for your students? How do you encourage students to respond to creative activities? How effective are these approaches for you and your students?

Classroom observation, if agreed to, could take place either online, or in a face to face classroom. Students will be informed of the presence of the principal researcher who will make notes during that time. The researcher will not interfere with the normal running of the classroom.

In the analysis of the findings, a pseudonym only will be used to identify your case study.

If you agree to participate, you do not have to answer any questions that you're not comfortable answering. You can withdraw from the project at any time without comment or penalty. If you withdraw, on request, any identifiable information obtained from you will be destroyed.

Your decision to participate, or not participate, will in no way impact upon any current or future relationships you have with QUT.

EXPECTED BENEFITS

It is expected that this project will encourage you to reflect on your teaching, and how creativity is developed in students as they progress through their university studies. A summary of creative learning designs will be made and you may choose to place this information in your personal teaching portfolio or use the information as evidence of exemplary practice when applying for promotion at a future date.

The findings and any guidelines generated from the research will be communicated to the wider university community through publications and dissemination at conferences. You will be notified of any relevant publications that arise from the research, and a short summary of the findings will be supplied on request.

RISKS

There are no risks beyond normal day-to-day living associated with your participation in this project.

PRIVACY AND CONFIDENTIALITY

All comments and responses will be treated confidentially, and associated with a pseudonym for the purposes of the interview and case study. The names of individual persons are not required for the purposes of this enquiry.

Participants will have the opportunity to verify your comments and responses from the transcript of interview prior to final inclusion. The audio recording will be retained along with the transcript and other data from the research, as per Ethics Committee requirements, for a period of five years after the research is completed, in a locked cabinet. Participants may access the audio recording at any time, should they wish.

Please note that non-identifiable data collected in this project may be used as comparative data in future projects.

CONSENT TO PARTICIPATE

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate.

QUESTIONS / FURTHER INFORMATION ABOUT THE PROJECT

If you have any questions or require any further information please contact one of the research team members below.

Robyn Philip – PhD candidate
Creative Industries Faculty
Phone: 0422 109 134 (mobile)
Email: rl.philip@.qut.edu.au

Dr Ruth Bridgstock – Research Fellow
Creative Industries Faculty
Phone: 07 3138 8587
Email: r.bridgstock@qut.edu.au

Dr Shaun Nykvist – Senior Lecturer,
Faculty of Education
Phone: 07 3138 8587
Email: s.nykvist@qut.edu.

CONCERNS / COMPLAINTS REGARDING THE CONDUCT OF THE PROJECT

QUT is committed to research integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Unit on 07 3138 5123 or email ethicscontact@qut.edu.au. The QUT Research Ethics Unit is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.

Thank you for helping with this research project. Please keep this sheet for your information.

Queensland University of Technology Brisbane Australia	**CONSENT FORM FOR QUT RESEARCH PROJECT** **– Interview and Case Study –**
'Designing for creativity in technology-mediated learning environments in higher education' **QUT Ethics Approval Number 1100001543**	

RESEARCH TEAM CONTACTS

Robyn Philip – PhD candidate
Creative Industries Faculty
Phone: 0422 109 134 (mobile)
Email:rl.philip@.qut.edu.au

Dr Ruth Bridgstock – Research Fellow
Creative Industries Faculty
Phone: 07 3138 8587
Email: r.bridgstock@qut.edu.au

Dr Shaun Nykvist – Senior Lecturer,
Faculty of Education
Phone: 07 3138 8587
Email:s.nykvist@qut.edu.a

STATEMENT OF CONSENT

By signing below, you are indicating that you:

- have read and understood the information document regarding this project
- have had any questions answered to your satisfaction
- understand that if you have any additional questions you can contact the research team
- understand that you are free to withdraw at any time, without comment or penalty
- understand that you can contact the Research Ethics Unit on 07 3138 5123 or email ethicscontact@qut.edu.au if you have concerns about the ethical conduct of the project
- understand that the project will include audio recording
- understand that non-identifiable data collected in this project may be used as comparative data in future projects
- agree to participate in the project.

Please tick the relevant box below:

☐ I agree for the interview to be audio recorded.

☐ I do not agree for the interview to be audio recorded.

☐ I agree to classroom observation.

☐ I do not agree to classroom observation.

☐ I agree to sharing learning designs, and other teaching documents as relevant.

☐ I do not agree to sharing learning designs, and other teaching documents.

Name ……

Signature ……

Email address……

Date ……

Please return this sheet to the investigator.

Queensland University of Technology Brisbane Australia	**PARTICIPANT INFORMATION FOR QUT RESEARCH PROJECT** **– Student Focus Group –**
'Designing for creativity in technology-mediated learning environments in higher education' **QUT Ethics Approval Number 1100001543**	

RESEARCH TEAM

Principal Researcher: Ms Robyn Philip, PhD student, Queensland University of Technology (QUT)

Associate Researchers: Dr Ruth Bridgstock and Dr Shaun Nykvist, QUT

DESCRIPTION

This project is being undertaken as part of a PhD study by Robyn Philip.

The purpose of this project is to investigate how creativity can be fostered in courses designed for higher education. The aim is to look at methods and strategies that teachers adopt when they aim to encourage student creativity. The researchers will explore the conditions in which students can best develop their creative capacity, along with the role that new digital technologies play in this context.

You are invited to participate in this research because you have attended a class where the teacher has designed some interesting experiences for you, in order to encourage you to be creative. The research team is interested in your views about that experience.

PARTICIPATION

Your participation in the research is entirely voluntary. If you agree to participate, you'll be asked to join in a focus group with five other students (six in all). This will last for about an hour, and take place at an agreed location at your own University or your teacher/s, or may even be by phone or Skype conference call.

The focus group will be audio recorded and the facilitator will take notes during the session. A transcription of the recording will be made at a later time. Questions will include: What do you think it means to be creative? What activities or assessments have encouraged you to be creative? How effective were these activities in your view?

If you agree to participate, you don't have to answer any questions that you're not comfortable answering, and you can withdraw from the project at any time without comment or penalty. If you withdraw, on request any identifiable responses obtained from you will be destroyed.

For the purposes of the research, you will be given a pseudonym (for example, Student 1), and you will not be personally identified in any publication of the findings.

Your decision to participate, or not participate, will in no way impact upon any current or future relationships with your own university or your teacher's.

EXPECTED BENEFITS

To recognise your contribution should you choose to participate, the research team is offering participants a $10 coffee shop voucher.

It is also expected that this project may encourage you to think about certain learning experiences during your studies at university. The findings and any guidelines generated from the research will be communicated to the wider university community through publications and at conferences, and may therefore benefit future students. On request, if you provide your contact details, you can be sent a short summary of the findings of the focus groups.

RISKS

There are no risks beyond normal day-to-day living associated with your participation in this project.

PRIVACY AND CONFIDENTIALITY

All comments and responses will be treated confidentially, and associated with a pseudonym for the purposes of the research. The names of individual persons are not required for this enquiry.

The audio recording of the focus group will be retained along with the transcript and other data from the research, as per Ethics Committee requirements, for a period of five years after the research is completed, in a locked cabinet.

Please note that non-identifiable data collected in this project may be used as comparative data in future projects.

CONSENT TO PARTICIPATE

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate.

QUESTIONS / FURTHER INFORMATION ABOUT THE PROJECT

If you have any questions or require any further information please contact one of the research team members below.

Robyn Philip – PhD candidate
Creative Industries Faculty
Phone: 0422 109 134 (mobile)
Email: rl.philip@.qut.edu.au

Dr Ruth Bridgstock – Research Fellow
Creative Industries Faculty
Phone: 07 3138 8587
Email: r.bridgstock@qut.edu.au

Dr Shaun Nykvist – Senior Lecturer,
Faculty of Education
Phone: 07 3138 8587
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CONCERNS / COMPLAINTS REGARDING THE CONDUCT OF THE PROJECT

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Thank you for helping with this research project. Please keep this sheet for your information.

Queensland University of Technology Brisbane Australia	**CONSENT FORM FOR QUT RESEARCH PROJECT** **– Student Focus Group –**
'Designing for creativity in technology-mediated learning environments in higher education' **QUT Ethics Approval Number 1100001543**	

RESEARCH TEAM CONTACTS

Robyn Philip–PhD candidate	Dr Ruth Bridgstock–Research Fellow	Dr Shaun Nykvist–Senior Lecturer
Creative Industries Faculty	Creative Industries Faculty	Faculty of Education
Phone: 0422 109 134 (mobile)	Phone: 07 3138 8587	Phone: 07 3138 8587
robyn.philip@student.qut.edu.au	Email:r.bridgstock@qut.edu.au	Email:s.nykvist@qut.edu.au

STATEMENT OF CONSENT

By signing below, you are indicating that you:

- have read and understood the information document regarding this project
- have had any questions answered to your satisfaction
- understand that if you have any additional questions you can contact the research team
- understand that you are free to withdraw at any time, without comment or penalty
- understand that you can contact the Research Ethics Unit on 07 3138 5123 or email ethicscontact@qut.edu.au if you have concerns about the ethical conduct of the project
- understand that the project will include audio recording
- understand that non-identifiable data collected in this project may be used as comparative data in future projects
- agree to participate in the project.

Please check the following if you would like to receive a short summary of the research findings.

☐ I would like to be sent a summary of the findings of the focus groups.

Name ……

Signature ……

Email address……

Date ……

Please return this sheet to the investigator.

APPENDIX G: ADDITIONAL SURVEY TABLES AND COMMENTS FROM CHAPTER 4

Table G1

Age and gender (N=170)

Age	Male %	Female %	Not known %	Total % gender
18-24	0.00	0.6	0.00	0.59
25-34	0.59	6.47	0.59	7.65
35-44	9.41	12.94	0.00	22.35
45-54	15.88	20.00	0.00	35.88
55+	11.18	12.35	0.59	24.12
Not known	0.00	0.59	8.82	9.41
Total by age	37.06	52.90	10.00	100.00

Note: Sample represented 0.15% of staff from Australian HE, 2012 (N=113,630). National figures for gender: male = 44%, female 56%. Figures are for combined academic and non-academic staff. (National statistics source: Australian Bureau of Statistics, 2012)

Table G2

Comparison of three HE creativity surveys

Location, authors & date	Target higher education population	Aim of inquiry	Gender balance	Dominant age range	N
1. UK (Fryer, 2006)	Exemplary UK National Teaching Fellows from HE	"To ascertain the views of National Teaching Fellows about creativity and learning, the effect they perceive this has on their teaching and the implication for teaching and learning in HE." (Fryer, 2006, p. 77)	Male: 58.9% female: 41.1%	50-59 years, 54.4%	94
2. Australia (McWilliam & Dawson, 2007)	Exemplary Australian Carrick HE teaching award winners	A comparative study based on 2006 UK's Imaginative Curriculum project with the aim of understanding "the link between creativity and higher education pedagogy through the perceptions and opinions of creative academics" (McWilliam & Dawson, 2007, p. 3)	male: 38% female: 52%	40-49 years, 40.5%	37
3. Australia (Philip, 2012)	Those who teach, manage, support, lead, and/or research in learning and teaching in HE	To ascertain the views of the target population regarding the value of creativity, perspectives on teaching creativity and designing for it in the curriculum, and the impact of ICTs and delivery mode on creative learning and teaching.	Male: 37.06% female: 52.9%	45-54 years, 35.88%	170

Table G3

Demographics: Institutions by location (n=149)

Type of institution	%	Australasian location	%
Australian universities	71.7	Australian HE*	82.6
Other Australian HE institutions	10.9	New Zealand HE	10.9
New Zealand universities	6.5	Other	6.5
Other NZ HE institutions	4.3		
Other institutions	6.5		
Total	100	Total	100

Note: *HE = Higher Education

Table G4

Participants' institutional location by Australian state or territory, or country (NZ only)

Institutional location	Institutions (n)	%
ACT	1	2.2
NSW	9	19.6
National (AUS)	3	6.5
Northern Territory	2	4.3
QLD	8	17.4
SA	2	4.3
Tasmania	1	2.2
Victoria	8	17.4
WA	4	8.7
NZ	5	10.9
Other	3	6.5
Total	46	100.0%

Table G5

Participants by title compared with national statistics

	Tutor/ Assoc. Lecturer	Lecturer	Senior Lecturer	Associate Prof	Prof	Adjunct Prof	*Staff or Education. Developer	Con sult-ant	n (100%)
2012 survey	13.5%	25.4%	24.6%	9.7%	11.9	1.5%	12.6%	.7%	134
				34.2%					
National statistics	7.6%	11.7%	10.2%	11.7%			-	-	113,630

Note: *May be academic or non-academic staff

(National statistics source: Australian Bureau of Statistics, 2012)

Table G6

Primary role at university and employment by time fraction

Role	Employment by time fraction					
	Full time	Part time	Casual	Consultant	Unspecified	Total N=170
Teaching	25.9%	5.3%	7.1%	0.6%	0%	38.8%
Educational leadership	14.1%	0.6%	0.0%	0.0%	0%	14.7%
Staff, curriculum or educational development	17.6%	2.4%	1.2%	0.0%	0%	21.2%
Research	7.1%	2.9%	1.2%	0.0%	0%	11.2%
Consultancy	0.0%	1.2%	0.6%	0.0%	0%	1.8%
Unspecified	2.4%	0.0%	0.0%	0.0%	10%	12.4%
Total	67.1%	12.4%	10.0%	0.6%	10%	100%

Note: Comparison with national statistics 2012: Full-time 75.7%, fractional 24.3% (P/T & casual), N= 113,630 . Compared with national statistics, the balance of full-time respondents versus fractional employees in the survey is somewhat similar, as casual and part-time employees represent close to the same proportion as those identified in national figures (22.4% vs 24.3%), even though full-time employees would seem to be slightly under-represented in the sample by comparison (67.1% vs 75.7%). Note, however, that 10% of respondents did not specify their status which may or may not account for this difference. (National statistics source: Australian Bureau of Statistics, 2012)

Table G7

Areas where teaching, support or leadership undertaken

Undergraduate*	Postgraduate (course work)	Postgraduate (by research)	Unspecified
81.6%	63.2%	46.1%	11.1%

Note: *More than one level could be selected (n=152).

Table G8

Examples of conceptual elements combined in succinct descriptions or definitions

Concepts of creativity	Discipline	Elements of creativity
"Thinking, moving, being, expressing yourself outside the square."	#154, early childhood	Process, ways of thinking, originality and aesthetics (4)
"The ability to imagine and express new ideas, or new ways of connecting ideas."	#155, engineering	Process, ways of thinking and originality (3)
"Creating 'something' from 'nothing'."	#52, architecture & interior design	Process and product (2)
"Exploring the least travelled road."	#2, fashion	Process, and original non-orthodox approaches (2)
"The ability to extrapolate ideas, constructs, concepts."	#143, health	Process and ways of thinking (2)
"In the field of interaction design creativity means responding to a design problem with a unique solution."	#167, interactive & visual design	Process, product, originality, problem solving and domain (5)
"I don't know how to define it, but I know it when I see it! I think this answer to the question is a little bit creative :-)"	#157, engineering	Product (1)

Table G9

Importance of developing student creativity

Value to student	Category	Example
Academic skill set	1.Essential capability, regardless of context 2. Required for learning in an unknown future 3. General good, supporting many areas of learning	Value 1: "I think creativity is useful in whatever field of practice you're working in. In an academic context, being creative is an essential part of contributing to new knowledge." (creative writing, #58)
	4. Valued, but with constraints 5. Ideal, but not essential 6.Problem with parameters and conceptual language	Value 4: "Sadly, so many of our programs and the way we teach them (and the constraints under which we teach and under which students learn) tend to constrain creativity." (educational development, #156)
Employment values	7.Capability providing competitive advantage in the workplace 8. Essential, but not necessarily valued in the workplace 9. Capability which helps in combination with other skills	Value 7: "Creativity in this sense may be the tacit factor in a competitive context." (teaching & learning, #9)
	10. Knowing the place of creativity – may or may not be appreciated	Value 10: "As beginning professionals, the student needs to first understand what is normative and expected by the general public. Creativity, or the not-expected, can be surprising or even distressing for people in vulnerable situations." (nursing, #89)
Life skill values	11. High value – not just for employment 12. Value for enhancing emotional well-being and engagement in life	Value 11: "Finding employment is not the be all and end all of a career. We train for life not for the job." (engineering, #49)
	13. A means of empowerment and providing opportunities	Value 13: "Life should be adventurous. Encouraging creativity in others enables or affords them the same kinds of opportunities." (creative writing, #25)

Table G10

Perceived value placed on creativity by department, the university and students

Category	Example	Discipline
1. Creativity as a core value	"It's at the core of each student's educational experience here."	teaching & learning, #104
2. Problematic, mixed responses	"Even though listed as a graduate attribute, staff design limited opportunities for demonstration of this."	teaching and learning, #9
	"Conformity and compliance seem to be valued more highly."	dance, #72
	"Expectations are from Uni that students will just simply "be creative". Level of knowledge students are getting through lectures (incredible small amount of teaching-lecture hours) and further through tutorials is very, very low. On top of that you are working in totally 'crowded' environment where any individual or small group work is nearly impossible (noise, destruction, space that is so difficult change (take time) etc."	architecture & interior design, #52
	"I think students value creativity support, but often don't recognise the various forms it can take."	computer science, #67
3. Contested language and conceptions	"Creativity is not a term that is used in our area of work when describing our teaching, it is perhaps used when describing high end research but it is not part of our major discourse in health."	health science, #86
	"Some of the students I work with see themselves as 'practical' rather than 'creative' although of course the two are not mutually exclusive."	production, #87

Table G11

Can creativity be taught?

Comments	Discipline
"Creativity can be learnt but not taught."	theatre production, #76
"Re (a), depends on one's defn. of 'teaching'. e.g. 'direct instruction' probably wouldn't work."	teacher education, #109
"I think creativity can be taught, levels of creativity will vary though."	engineering, architecture & IT, #92
"You can teach students to ask new questions or take new perspectives."	justice/criminology, #14
"If the word 'taught' implies creativity is a learned behaviour, I think it missed the point. However, one can learn as an adult to monitor, challenge and let go of the self-limiting habits which don't let creativity emerge, so in this way it is teachable."	music therapy, #98
"In relation to (a), creativity can certainly be nurtured by an appropriate teaching approach."	teaching & learning, #104
"I think that you can teach people skills that could allow them to be creative, but not creativity per se; I also think that it is possible to teach all the skills a researcher needs, but you can't teach someone to be a researcher. In both cases, the drive has to be intrinsic."	business, #133

Table G12

Issues of professional context affecting creative outcomes

Concern	Comments	Discipline
1. Impact of resource constraints	"I think in the creative writing discipline there is space for me to design class plans that strengthen creativity. However, practical considerations, such as time constraints and diverse workload can mean this doesn't always happen."	creative writing, #58
	"We are as creative in our course design, and teaching as we can be but with 630+ first year students it is sometimes difficult to set up the ideal teaching environment that would lead to creative learning outcomes."	health science, #86
2. Impact of organisational culture and accountability	"Study environment is definitely not what should be . . . it is about business. Try to accommodate as many as possible students and after that 'create story' how they 'study' in studio environment. That is unfortunately just simple joke and everyone know this."	architecture & interior design, #52
	"Being measurable and accountable in all things can compromise creative actions."	design and art, #17
3. Pedagogical culture and need for change	"The underpinning thinking stunts creative thinking or practice. [It is the] wrong way to go about developing online units . . . We will have textbooks online with a few video and discussions boards–hardly creative or new. The mode has changed - thinking stays the same."	learning & teaching, #152
4. Assessment practices and requirements	"I think assessment can repress creativity at times. Students tend to want to focus on assessment in class, and can be resistant to activities that are tangential. Students tend to focus on marks rather than feedback, and this can lead to an unwillingness to experiment with creative approaches. However, students do have opportunity to submit creative work for assessment."	creative writing, #58
5. Pedagogical context does not require creativity.	"If a body of knowledge must be taught and then that same body of knowledge will be tested and a grade given on how well and individual can recall that body of knowledge, creativity is not required."	physical education, #80

Table G13

Categories demonstrating variation in perceptions of the relationships between creative and critical thinking, and problem solving (example of initial coding)

1. All modes of thinking are slightly different.
2. Problem solving may or may not be creative.
3. Creativity is a component of problem solving and/or critical thinking.
4. Critical thinking and/or problem solving are components of creativity, i.e. the converse of the previous view.
5. There is an overlap of two modes of thinking, creative thinking and critical thinking, which are supportive of one another.
6. There is an affective component present in creative thinking that is absent from problem solving and/or critical thinking.
7. Creativity is perceived as energy ("verve, panache"), and this emotion is not found in critical thinking or problem solving.
8. Risk taking is an element of creativity, but is absent from problem solving and critical thinking.
9. Creative thinking is divergent thinking and critical thinking is convergent thinking.
10. Creative thinking and critical thinking are not interchangeable. Critical thinking can be taught but creativity comes from an absence of constraints.
11. Creativity is "ephemeral and open-ended" compared with critical thinking.
12. The ability to "let go" (be open to different possibilities) is a precondition for all three modes of thinking.
13. Creative thinking, critical thinking and problem solving are complementary and overlapping.

Table G14
Teaching strategies for creative learning outcomes

Strategy Type	Example	Discipline
Model creativity	As a teacher, demonstrate creativity. Use the studio teaching model.	creative writing, #25 architecture, #66
Design for creativity	Use curriculum design and reform to build in creativity. Use design thinking (investigate-design-test-evaluate).	teacher education, #109; arts, #8; flexible learning, 119; engineering, architecture & IT, #92; & #13
Authentic learning tasks	Use real world tasks based on real world social issues, things that matter.	medicine, #27
Set open-ended problems	Set problems with multiple solutions. Scaffold tasks and don't leave students floundering. Allow room for exploration. Allow autonomy. Encourage reflection.	early childhood, #20; teaching & learning, #26; medicine, #27; computer science, #67; health services, #140
Engagement	Use creativity as a way to engage students in the curriculum. Challenge students and encourage them to go beyond what they already know. Use play as a means of engagement. Use "what if?" scenarios. Find opportunities for expression that leads to creativity.	early childhood, #20; English, #30; design, #21; creative writing, #28; business, #106; educational development, #156; no discipline #136; education & arts, #77; architecture, #82; academic development #78; educational development, #156; journalism, media, communication, #90; learning & teaching, #128;
Allow for multiple perspectives and formats	Make opportunities for multiple responses. Allow for multiple assignment options. Encourage multi-disciplinary groups. Use different technologies. Use of non-traditional tools. Use of social media.	early childhood, #20; architecture, #82; education/marketing , #134; engineering, #155
Collaborative work	Set up multi-disciplinary or cross-disciplinary groups to challenge students to address complex problems. Use the value of groups, but acknowledge the importance of self and unique personal response. Allow for Individual and group interpretation. Support multi-disciplinary groups for problem solving. Collaborate with other courses.	#124; production, #87; business, #138; teaching & learning, #9; medicine, #27

Strategy Type	Example	Discipline
Technique and knowledge	Focus on building concepts and techniques. Help students find their own voice and style, not just repetition of what has gone before. Build critical thinking skills.	creative writing, #28; design & interior design, #46
Assessment	Use project-based assessment. Incorporate student designed and negotiated assessment. Discuss assessment with tutors so that novel solutions are more readily accepted, and where appropriate, extra marks are given for those taking a risk, for being creative, e.g. make provision in the rubric. Provide opportunities and alternatives to assessment, to engage in open-ended tasks, to interpret (use non-assessable activities as well, not only summative assessment).	drama, #61; creative industries, #74; health science, #86; production, #87; engineering, architecture & IT, #92

Table G15

Delivery context and ease of fostering creativity

Item	n	Don't agree/ Don't agree at all (%)	Neutral/ undecided (%)	Agree/ Agree completely (%)
Q10a. I think it is easy to foster students' creativity in the context of face-to-face learning.	156	12.2	23.7	64.1
Q10c. I think it is easy to foster students' creativity in the context of blended learning (online mixed with face-to-face).	153	15.7	34.6	49.7
Q10b. I think it is easy to foster students' creativity in the context of online learning.	155	35.5	38.1	26.5
Q10d. I think it is easy to foster students' creativity with the support of a learning management system (e.g. with Blackboard, Moodle etc).	150	36.7	36.7%	26.7

Table G16

Examples of practical activities that may foster creativity (full list)

Activity	Example	Likely CTS criteria met
Awareness of audience and format	Transform content created for one audience into content for another, e.g. students take an original research essay written for an eclectic audience, and rewrite it as a blog post for a more general audience. (media & communications, #24)	1, 3, 5, 6
Use multimedia & ICTs	Students create a video to demonstrate a clinical skill (nursing, #31), or multimedia to think differently about a topic (#55, dance), utilise Web 2.0 affordances (engineering), develop posters (journalism, media & communication, #90), build 3D models to represent research outcomes (education, #168; biology, #122)	1, 2, 3, 5, 6
Games and play	Utilise games, puzzles, and challenges (business, #106; architecture, #82) Role play to develop discussion of case studies (#156, educational development)	1 - 6
Relate task to social problem	Students relate a task to real-world problems (performance studies, #54	1 - 6
Research	As part of problem solving or the design process (education, #168 & #5)	1, 3, 6
Use connections and collaboration to foster creativity	"Put strange people together" (business, #59) Mind mapping to understand complex concepts (#156, educational development)	1-6
Problem solving	Take a problem, explore the options, build knowledge, then review others' work (architecture, #68)	1-6
Open-ended tasks	Open-ended questions and debates during lectures (engineering, #57; architecture, #68; production, #87)	1, 2, 3, 6
Narratives and examples	Case studies and examples (educational development, #156; business, #22)	1-6

Table G17

Categories for responses about the importance of class size

1. Numbers are “irrelevant”.
2. Class size is not the problem; limited imagination is the problem.
3. Small classes are better and easier, e.g. in which to build trust, and devote time to each student.
4. Small classes can be used to pilot new technologies.
5. Medium size classes as optimal for supporting discussion (20-25 students).
6. There are possibilities in either small or large classes.
7. You can make opportunities in large classes.
8. Large classes require more planning and good design: “Bad course design can escalate very quickly. “ (#92, engineering, architecture & IT).

Table G18

Survey questions, item means and standard deviations (N= 170)

Item	n	Mean	SD
Q1. Definition of creativity (open ended question)	156	n/a	n/a
Q2a. Importance of creativity as part of academic skill set	170	4.54	.78
Q2b.Importance of creativity in order to find employment	170	3.98	.99
Q2c.Importance of creativity as a general life skill	170	4.48	.84
Q3a. Creativity valued by department or centre	166	3.64	1.15
Q3b. Creativity valued by university	166	3.37	1.08
Q3c. Creativity valued by students with whom I work	163	3.66	1.04
Q4. Reasons unable to actively promote creativity at this time	146	n/a	n/a
Q5. Examples of creativity (open ended question)	130	n/a	n/a
Q6a. Creativity can be taught	157	3.59	1.05
Q6b. Can set up conditions for student creativity	158	4.57	.62
Q6c. Can design for creative learning outcomes	157	4.48	.71
Q6d. Distinguish creative thinking and problem solving	154	3.36	1.23
Q6e. Distinguish creative thinking and critical thinking	157	3.06	1.30
Q7a. Know how to set up conditions for developing student creativity	154	3.66	.91
Q7b. Know how to design for student creativity	153	3.69	.97
Q7c. Have the technology to promote student creativity	151	3.60	1.00
Q7d. Have the skills to use the technology to promote student creativity	152	3.60	1.07
Q8a. Scope and conditions to be a creative educator	145	3.84	1.11
Q8b. Scope and conditions to support creative learning and teaching	152	3.86	1.07

Item	n	Mean	SD
Q8c. My students have the scope and conditions to demonstrate creativity	136	3.79	1.09
Q9a. Familiarity with delivery mode - F2f/blended / distance-online	149	n/a	n/a
Q10a. Ease of fostering creativity in f2f environment	156	3.70	1.04
Q10b. Ease of fostering creativity in online environment	155	2.84	1.02
Q10c. Ease of fostering creativity in blended learning environment	153	3.37	1.02
Q10d. Ease of fostering creativity with LMS	150	2.78	1.09
Q11a. Effect of class size on creativity	155	2.76	1.20
Q11b. Role of networks of peers and mentors	155	4.08	.92
Q12a. Learning and teaching most important for fostering creativity	151	3.95	.93
Q12b. Conditions and context most important for fostering creativity	152	4.02	.84
Q12c. Technology most important for fostering creativity	152	2.65	1.09
Q13 Gender	153	n/a	n/a
Q14. Age range	154	n/a	n/a
Q15. University (workplace) 1/2	149	n/a	n/a
Q16. Discipline 1/2	149	n/a	n/a
Q17. Level – undergraduate/postgraduate	152	n/a	n/a
Q18. Years teaching, supporting, leading, and/or managing units/courses in universities	151	12.52	8.34
Q19. Years using the internet in HE	150	9.01	5.68
Q20. Basis of employment	153	n/a	n/a
Q21. Title for university 1/2	136	n/a	n/a
Q22. Role at university 1/2	150	n/a	n/a

APPENDIX H: CREATIVE THINKING STANDARDS RUBRIC

Source: Table from Assuring Graduate Capabilities project (Oliver, 2011)

"Adapted from the Association of American Colleges and Universities AAC&U VALUE Rubrics (http://www.aacu.org/value/rubrics/CreativeThinking.cfm) and acknowledged with thanks, by the Assuring Graduate Capabilities project (http://boliver.ning.com/). Support for this resource has been provided by the Australian Learning and Teaching Council Ltd, an initiative of the Australian Government Department of Education, Employment and Workplace Relations. The views expressed in this resource do not necessarily reflect the views of the Australian Learning and Teaching Council. (Last updated May 2011.)

Definition: Creative thinking is both the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by divergent thinking, a high degree of innovation, and risk taking."

Novice to Expert categories	*Expert*	*Proficient*	*Competent*	*Novice*	*Beginner*
	Graduates as experienced professionals can:	*Graduates as new professionals can:*	*Graduates of this course can:*	*Students in the middle stages can:*	*Students in the early stages can:*
1. Acquiring Competencies This step refers to acquiring strategies and skills within a particular domain.	[add text]	Reflect: Evaluates creative process and product using domain-appropriate criteria.	Create: Creates an entirely new object, solution or idea that is appropriate to the domain.	Adapt: Successfully adapts an appropriate exemplar to his/her own specifications.	Model: Successfully reproduces an appropriate exemplar.
2. Taking Risks May include personal risk (fear of embarrassment or rejection) or risk of failure in successfully completing assignment, i.e. going beyond original parameters of assignment, introducing new materials and forms, tackling controversial topics, advocating unpopular ideas or solutions.	[add text]	Actively seeks out and follows through on untested and potentially risky directions or approaches to the assignment in the final product.	Incorporates new directions or approaches to the assignment in the final product.	Considers new directions or approaches without going beyond the guidelines of the assignment.	Stays strictly within the guidelines of the assignment.
3. Solving Problems	[add text]	Not only develops a logical, consistent plan to solve problem, but recognizes consequences of solution and can articulate reason for choosing	Having selected from among alternatives, develops a logical, consistent plan to solve the problem.	Considers and rejects less acceptable approaches to solving problem.	Only a single approach is considered and is used to solve the problem.

Novice to Expert categories	*Expert*	*Proficient*	*Competent*	*Novice*	*Beginner*
	Graduates as experienced professionals can:	*Graduates as new professionals can:*	*Graduates of this course can:*	*Students in the middle stages can:*	*Students in the early stages can:*
		solution.			
4. Embracing Contradictions	[add text]	Integrates alternate, divergent, or contradictory perspectives or ideas fully.	Incorporates alternate, divergent, or contradictory perspectives or ideas in a exploratory way.	Includes (recognizes the value of) alternate, divergent, or contradictory perspectives or ideas in a small way.	Acknowledges (mentions in passing) alternate, divergent, or contradictory perspectives or ideas.
5. Innovative Thinking Novelty or uniqueness (of idea, claim, question, form, etc.)	[add text]	Extends a novel or unique idea, question, format, or product to create new knowledge or knowledge that crosses boundaries.	Creates a novel or unique idea, question, format, or product.	Experiments with creating a novel or unique idea, question, format, or product.	Reformulates a collection of available ideas.
6. Connecting, Synthesizing, Transforming		Transforms ideas or solutions into entirely new forms.	Synthesizes ideas or solutions into a coherent whole.	Connects ideas or solutions in novel ways.	Recognizes existing connections among ideas or solutions.
7. Exemplars	[add text, image, audio, video]	[add text, image, audio, video]	[add text, image, audio, video]	[add text, image, audio, video]	[add text, image, audio, video]

APPENDIX I: LEARNING DESIGNS IN DESCRIPTIVE TEXT-BASED FORMAT CASES 1-5

Title: Workshopping Creative Writing

Source: Case 1, Anna

Description

Workshopping creative writing is a formative peer review activity. Students draft a creative work in any genre (e.g. a poem, a short story, a scene from a novel), and post it to the unit (subject) website for critique by fellow students and their tutor. Students from the same tutorial group and the tutor download the file, read and critique the writing, and then give the author constructive feedback either online or in the face-to-face classroom. The work is discussed in class (online or offline) at a scheduled time during the semester. The author can use the feedback to further develop their work and refine the writing for assessment or later publication.

Keywords

Creative writing, workshopping, peer review, feedback

Target audience, group size and setting

Undergraduate or postgraduate tutorial group, 200-level, 20 students per group, online (distance) or in a face-to-face setting.

Timeframe

- Workshopping takes place once or twice a semester for each student, depending on class size, and begins in the third week of semester. Each week students in the tutorial class discuss work drafted by their peers according to a rostered list.
- The workshopping process takes between 2-3 to 12 weeks, depending on when the student nominates for the workshop schedule and the time their creative work takes to draft before submitting it for peer review.
- Students in the class need about a week to read and critique the draft piece. Feedback is provided in handwritten form on the hard copy, or in digital form online via the discussion board on the unit website.

Creative learning opportunities

- Give and receive feedback on writing in progress, which is useful feedback for the individual and the group.
- Opportunity to test a variety of audience responses to a creative work.
- Develop written and oral language for critique of a range of genres, styles and writing abilities.
- Reflect on others' creative approaches, and one's own writing processes, techniques and preferences.
- Practise aural and oral communication skills.

- Participate in the workshopping process which contributes to summative participation mark) and formative self-assessment.

Resources (artefacts to support creativity)

- Examples of exemplary writing from a variety of authors and genres.
- Set textbook on the craft of writing, other recommended writing craft and grammar texts, lecture recordings and notes.
- Own found resources for inspiration and motivation–e.g. found in the physical and virtual landscapes, galleries, historical documents, diaries, memories, the Internet.
- Online discussion board used as a tool for distribution of creative drafts to distance and on-campus students.
- Schedule for workshopping: students volunteer and commit to a time.
- Guidelines for engaging in the workshopping process (how to give constructive and creative feedback, responsibility of committing to the schedule).

Supports to facilitate the workshop process

- A supportive lecture and tutorial environment where students feel secure enough to share their writing drafts with peers and the tutor for feedback and comment.
- Online students need special encouragement to participate and share writing and ideas as the usual face-to-face cues are absent. The face-to-face environment requires equally skilful facilitation as a mix of ages and motivations for writing and genre preferences will affect engagement levels and patterns. Readiness to listen and learn from others is key.
- A supportive creative space is required. If in a physical classroom, desks or chairs should be arranged in a collaborative pattern (L-shaped pattern or a circle rather than rows); if in an online environment tools for uploading and downloading draft files should be easy to navigate and operate with few technical difficulties.

Sequence of activities for the writing workshop

1. Student author elects date to workshop creative work and commits to class schedule.
2. Student author drafts creative piece.
3. Student author uploads draft to LMS for distribution to tutorial group, and suggests where feedback could be beneficially directed.
4. Peers and tutor download the draft, read, reflect, critique and write or record comments on hard copy (if on-campus) or submit comments to the discussion board (if online). Allow about a week for step 4.
5. Student author, peers and tutor discuss the draft at scheduled tutorial. Peers are responsible for bringing their own copy of the draft to class, and students are reminded of the guidelines for constructive and creative feedback during the workshopping process. Discussion is either synchronous in the physical classroom or asynchronous in the online classroom. Comments are returned to student on the printed copy during the face-to-face class, or for online students comments are returned during the scheduled period for

workshopping. An extended period for comment in the online environment supports considered and reflective commentary.

6. Student may revise the piece for summative assessment or later publication.

Title: Project Brief for Web Interface Design

Source: Case 2, Kasumi

Description

The brief for the project is to develop a concept for a web interface design from the first stage of problem finding, to the proof of concept (POC) stage, as a "first draft" only. (The finalised POC is presented in a subsequent assignment.) Students are expected to create three posters representing their creative work over that period. The first poster represents students' independent research and a critical analysis of emerging user interface trends in the industry. The poster is presented to the class for discussion and sharing in week 3. The other two posters address the next steps in response to the design brief. The second poster includes research into possible competing designs already in the marketplace, problem definition and framing of the student's proposed concept, narrowing the focus and scope. The last poster represents proof of concept, and the feasibility of the project. In the third step students describe and provide a rationale for the project and use sample screen designs and layouts for demonstration. Each time when the posters are presented, students in the class act as a diverse peer review audience, providing constructive feedback, and replicating industry practice.

Keywords

Design process, web interface design and interaction, peer review

Target audience, group size and setting

Undergraduate web interface design 200-level, in tutorial group, 20-25 in a face-to-face (on-campus) setting. (Adaptable to the fully online setting.)

Timeframe

Six weeks of a 13-week semester: Preparation begins in week 1. The first poster is due in week 3 and two more posters in week 6.

Creative learning opportunities

- Produce design solutions to complex design briefs following an iterative design process.
- Respond to a design brief from problem finding to proof of concept.
- Apply interface design and technical skills in a range of contexts.
- Continual iterative research into the state of the art (web interface design).
- Test audience responses to creative work (formative and summative).
- Develop ability to articulate (explain, justify and communicate) creative decisions graphically, verbally and technically.

- Reflect on one's own and others' creative style, aesthetics, design processes and techniques via the peer review process.

Resources (artefacts to support creativity)

- Examples of exemplary interface design from a variety of developers and genres.
- Recommended articles and websites on design process and technical aspects, lecture notes and tutorials on the web and via Lynda.com.
- Resources researched and found by students for inspiration and motivation–sourced from the world around and the Internet.
- Learning management system as a central point for communication and content repository
- Schedule for production of artefacts, linked to assessment
- Guidelines for critiquing others' work during the poster presentation process
- A tutor's blog with screencasts of tutorial work and supporting comments is a useful addition to the process.

Supports to facilitate the design process

- A supportive creative environment which motivates students to go beyond that which already exists on the Internet, and design something original and appropriate.
- A supportive lecture and tutorial environment which promotes students' confident sharing of designs with peers and the tutor.
- A readiness to listen and learn from others during the peer review process, and challenge assumptions.
- Students can be encouraged to set up personal blogs to demonstrate their concept development and comment on others' work.

Sequence of activities

1. Student provided with design brief.
    a) Student imagines or finds a problem to solve which addresses a specific human experience (e.g. a mobile phone or tablet application that improves the experience of having a meal).
    b) Student creates a poster based on their critical research addressing the problem.
    c) Posters are exhibited in class as a gallery, and students critique each other's work, discussing the designs and adding Post-it (sticky) notes with constructive feedback to a selection of posters. The results are discussed in groups and as a class. Poster is submitted for summative assessment.

2. Design and frame the problem:
    a) Building on step 1, student focuses on defining and framing the problem. Student goes through iterative stages of generating many solutions to the problem (ideation), then narrowing the choice down, selecting an option and comparing it with other competing options.

a) Student creates poster demonstrating concepts and research.
b) Posters are exhibited in class for peer review following description in step 1c.

3. Proof of concept:
   b) Student develops a solution to the brief, and creates a project synopsis, target user profiles and use case scenarios, using mockups, wireframes and other screen layouts and diagrams to illustrate the concept.
   a) Student creates a poster to demonstrate solution.
   b) Posters are exhibited in class for peer review following description in step 1c.

Title: Scaffolded Creative Inquiry, Society and Culture

Source: Case 3, Alex

Description

The following framework is a sequence of tasks structured into a weekly pattern of online activities created to assist students to build their academic writing and social research skills. The unit is about critical analysis and evaluation of contemporary society and culture. The framework provides scaffolding for students in their first year of university, where face-to-face class contact time and opportunities for clarification of concepts are limited. Through the framework, students are encouraged to be creative in their approach to social and cultural research. Having engaged with this learning pattern, students may see that it has relevance for other units in their course and adapt the pattern as part of their general learning approach. The framework is a series of activities set out in sequence on the unit website (the learning management system). Students are encouraged to read and act on the instructions and questions posed. The framework operates in blended learning mode, combining online interaction with one hour of face-to-face attendance at lectures and one hour of tutorial time, plus individual study. Some activities in the framework contribute towards assessment; others are regarded as preparatory learning for assessments.

Keywords

Social and cultural studies, active citizenship, supporting framework, academic writing and research skills

Target audience, group size and setting

Undergraduate first-year sociology students. Cohort size can be a small tutorial group or a class of 1,000 students as the framework operates online. The design is applicable for a blended or adaptable to a fully online setting.

Timeframe

One week of undergraduate study time: about 10 hours per week including in-class and out-of-class activities.

Creative learning opportunities

- Analyse social structures and cultural practices as an active and engaged citizen.
- Apply creative approaches to understanding social relations such as gender, class, race, and ethnicity.
- Engage with and critique social and mass media.
- Develop communication skills in written, verbal, oral, aural and physical forms.
- Conduct original research and develop social science research methods skills.

Resources (artefacts to support creativity)

- Weekly outline of tasks presented on the learning management system.
- Discussion board (for academic and social discussion, links to resources, administrative and technical questions) and email.
- Vodcasts that introduce the topic and inspire students about the weekly topics and their relationship to the real world.
- Unit textbook, set and recommended academic texts and contemporary texts (e.g. YouTube, online newspapers, blogs, Facebook, Instagram, Twitter, TV shows)
- Private Facebook site for students enrolled in the unit only.
- Resources found through students' own research and observation of the social world.

Supports to facilitate examination of social and cultural issues

- A supportive and inclusive academic environment that motivates students to engage in social and cultural research; the aim is to empower students to be active citizens.
- A supportive lecture and tutorial environment where students feel confident sharing their designs with peers and the tutor.
- A readiness to listen and learn from others during tutorials and lectures, raise awareness of the social environment around them, to be challenged and make new connections.
- Tutor/lecturer monitoring of the discussion board and unit Facebook site.

Sequence of activities

1. Student logs onto the learning management system and watches introductory video. The topic is raised in a lighthearted manner and related to current issues.
2. Student encouraged to read relevant chapter of textbook. A general introduction to the chapter is provided online with guiding questions. The chapter itself includes questions and encourages reflection on student's own context.
3. Student encouraged to read a related contemporary and controversial article by another author or the unit coordinator.
4. Student applies new knowledge and understanding to the set tutorial questions, which challenge social norms and cultural practices. Students bring responses to the tutorial.

5. Student encouraged to watch a second video which might set the current topic in its historical context and discuss the implications. This could be a TV or Internet commercial or a portion of an academic lecture.
6. Student enouraged to download the lecture slides and attend the lecture having prepared for the session. The recorded lecture is uploaded to the website for revision or for those who have missed the lecture.
7. Student attends tutorial, brings completed exercises and engages in discussion. The sequence assumes that students complete steps 1-5 before the lecture or tutorial.

Title: Concept Journal for Digital Imaging

Source: Case 4, Leo

Description

The aim of the concept journal is to enable the student to demonstrate how they have progressed through various creative stages to reach a point where the final product was created. Students construct a journal filled with images and notes which graphically and verbally records their ideas over time. This indicates how they have moved from ideas related to early research, through concept development, to the final finished creative work. Students explore a genre (e.g. mythical creatures) and collect images, sketches, screen grabs and descriptions that demonstrate where ideas for the final collage originated, and how the concepts evolved. They assemble and arrange the images and reflections so as to tell a story about their creative process and the rationale for their creative decisions. The final product is presented as a PDF file with a minimum of ten relevant examples and a minimum of 500 words of description. The journal accompanies the finished collage constructed in Photoshop, and this forms the other half of a major assignment.

Keywords

Concept journal, creative process, idea generation, refinement, creative decision-making

Target audience, group size and setting

Undergraduate students at 100-level in a fully online, distance education unit. Group size matters only for marking and facilitation, as the design is suited to individual, self-paced learning. It works well in small tutorial groups or with a cohort of 1,000 students. Setting could be blended, online, or face-to-face.

Timeframe

The assignment takes about two weeks to complete.

Creative learning opportunities

- Engage in and critique the creative process applied to a specific task.
- Document the stages of conceptual development of a creative work.
- Conduct original research and reflect on its value as part of the creative process.
- Collect, assemble and arrange images and notes to create a story about creative process.
- Develop graphical and verbal communication skills in Photoshop.

Resources (artefacts to support creativity)

- Assignment design brief.
- Unit tutorials and documents on how to develop skills using the software.
- Resources found through original research into the specified genre (from contemporary and historical texts, e.g. Internet, books, galleries, blogs, image sharing sites)

Supports to facilitate journal making

- Access to Photoshop software, scanner, camera, computer, Internet connection, pen and paper.
- A supportive creative environment online where students feel empowered to create images using a powerful program like Photoshop, to express themselves with digital images, and to share their ideas with peers via the discussion board (this is optional but encouraged).
- A readiness to engage in the iterative process of creating digital images; this includes an openness to the time consuming process of refining ideas, which begins broadly and then increasingly focuses on those concepts that connect and combine best in the circumstances.
- Tutors available to respond to student queries and support students through the process.

Sequence of activities

1. Review assignment design brief and student examples which provide guidance on the scope and nature of the journal.
2. Research the topic specified in the brief.
3. Develop a range of ideas that could possibly be developed for the final collage. Search widely for ideas and leave time to play with ideas.
4. Make entries in the journal as soon as the process of research begins and ideas start developing. Collect relevant images, drawings, scanned sketches and drawings and photos.
5. Make an initial selection of concepts that have the most meaning to start with. Reflect on the choices, evaluate and incubate the ideas.
6. Revisit the first selection of options and refine the choice further.
7. Compile, arrange and reflect on the images and notes made, and present a story about the process.
8. The final journal is submitted as a digital PDF file via the assignment tool in the learning management system.

Title: Role Play–The Pitch
Source: Case 5, Isla

Description
The role play is designed for students of architecture in a unit preparing them for transition to professional practice. The aim of the role play is to simulate the actions and creative decisions required to persuade a client that a newly formed architectural practice can provide the services they need. Students form a group and set up an imaginary Practice, they determine how they will pitch the expertise of their group to the client. They produce regulatory and marketing documents to communicate this to the client. They then plan the pitch and assign roles amongst the group. The students in role have ten minutes to persuade the client they are the architectural firm of choice for the nominated project. The role play ends with debriefing, reflection and assessment.

Keywords
Role play, architecture, professional practice, group work

Target audience, group size and setting
400-level undergraduate architecture students in a professional practice unit. Students form groups of four. Conducted in a blended learning setting but adaptable to a fully online environment.

Timeframe
Students have ten minutes for the presentation of the role play (the pitch), and six weeks preparation time. The presentation is scheduled for half way through the semester and is conducted in office space or small tutorial rooms (a face-to-face setting).

Creative learning opportunities

- Act in the role of a professional architect in a simulated office environment with three other professionals (students) and a client (tutor).
- Participate and manage the relationships in a creative group.
- Create graphic and verbal communications to persuade a client of the worth of the group.
- Document all stages of the process and reflect on the outcomes.

Resources (artefacts to support creativity)

- Assignment brief.
- Professional practice guidelines, specifications, and legislation relevant to establishing an architectural firm.
- Resources found through original research to build the simulated office practice structures (e.g. images, example architectural marketing documents, architectural and professional association websites)

- Access to software and computing resources to create marketing materials.
- Professional apparel to match the requirements of the presentation and role play.
- Tutorial or office space rooms for the presentation.

Supports to facilitate role play

- A supportive creative and professionally orientated environment which encourages confidence to perform the simulation.
- Encouragement to take risks and fully engage in the role play, even though an assessable task.
- Encouragement to work in a group which replicates professional practice.
- Tutors ready to engage in the role of client as well as assessor for the role plays.
- Access to design and standard office software applications.

Sequence of activities

1. Students form a group of 4 and familiarise themselves with the brief.
2. Students conduct office practice meetings, during which they define the structure of the Practice, the work they undertake as a Practice, clients with whom they have worked, capabilities of the employees and quality assurance measures.
3. Students create the necessary documentation in an office manual which details the items in step 2, and the marketing materials that will accompany their pitch to the client (e.g. brochure, business cards, Powerpoint/Prezi presentation or website).
4. Students plan their pitch to the client, document this and assign roles for the the Practice (e.g. Director of Marketing, Senior Partner), and the presentation.
5. Students rehearse their pitch to the client, playing with options, practising their speil, and evaluating the effectiveness of all communications.
6. Students in role present their pitch to the client. While careful planning is required, there is also a need to be prepared to improvise when questions are asked or if something unusual happens during the meeting. Students are assessed by the tutor (the client) during the presentation.
7. After the presentation students debrief with the tutor and reflect on the process and their responses to client questions and requirements.
8. Students submit their documents for assessment.

APPENDIX J: CHARACTERISTICS OF EXCELLENT TEACHING

The list is adapted from the UK National Teaching Fellowships Scheme Judging Mechanisms, originally at http://ntfs.itl.ac.uk/criteria.htm, but see Gibbs and Habershaw (2003, p. 12). According to Gibbs and Habershaw, the list should be considered as indicative only, as an excellent teacher would not be expected to demonstrate all the characteristics, or with equal emphasis.

An excellent teacher:

1. Makes a recognised contribution to the learning, teaching and assessment of the subject;
2. Incorporates sound subject knowledge, which is regularly updated in teaching, learning and assessment activities;
3. Uses techniques and approaches for learning, teaching and assessment which are 'fit for purpose' and appropriate for the context and mission of the university;
4. Plans, manages and delivers curriculum effectively;
5. Demonstrates creativity and innovation in the design and planning of learning activities;
6. Demonstrates understanding of how students learn;
7. Evaluates innovative approaches to learning and teaching and adopts those of value;
8. Establishes explicit learning outcomes for student learning;
9. Demonstrates excellence in assessment design and/or implementation, including the use of formative feedback to foster student learning;
10. Promotes high student achievement;
11. Recognises student diversity and devises strategies to work effectively with students with diverse characteristics;
12. Engages/enthuses/inspires students;
13. Promotes interactivity rather than passivity in classroom activity, in independent/ distance learning or other contexts;
14. Fosters student-centredness in their approaches to learning and teaching;
15. Demonstrates genuine interest in students;
16. Has excellent communication skills;
17. Is sympathetic and effective in the support of students
18. Is accessible and approachable;
19. Achieves added value/high retention rates with disadvantaged students;
20. Fosters student development and independence;
21. Is able to relate to students on programmes at different levels;
22. Evaluates own performance against stated outcomes;
23. Demonstrates commitment to scholarship in learning and teaching;
24. Publishes on learning and teaching;
25. Champions learning and teaching in the university;
26. Shares and promotes good practice;
27. Supports and collaborates with colleagues;
28. Recognises, evaluates and adopts innovative approaches where these enhance learning;
29. Offers and receives peer feedback on own teaching/assessment practice and uses it to enhance student learning;
30. Makes active use of student feedback to influence the development of practice;
31. Is reflective about personal teaching, learning and assessment practices;
32. Demonstrates commitment to personal/professional development.

APPENDIX K: EXAMPLES OF CONSTRAINTS THAT ENGAGE STUDENTS AND ENABLE CREATIVE OUTCOMES

Case	Example	Constraints	Creative outcomes
1	Free writing: Respond to an imaginative description–portray places, senses, action, feelings etc.	Time: c. 5-10 minutes in lecture period; Space: lecture theatre; Scenario: response to scenario described by lecturer Technology: pen and paper or laptop; Online students must self-motivate and organise, make a time and place to engage in the task without the benefit of peers alongside.	Getting started–not blocked by thoughts of "doing creative writing" (addresses issues of attitude and motivation) Generate as much writing as possible within timeframe Builds confidence and fluency Low stakes–individual, not assessable, no external judgement
2	Peer review of web design research: Students display posters representing early research on wall (gallery style) for review by tutor and classmates.	Time: c. 30 minutes during tutorial period; Space: Tutorial lab space Group numbers: c.25 students; Technology: one A3 printed poster	Present outcome of information gathering (research as part of problem definition and ideation stages) Developing a language for constructively critiquing other's work, thereby assessing own work Low stakes–collective peer review, part of assessment process but not assessable
3	Diversity and cultural rhythms: Demonstrate effect of different rhythms played in concert. Divide into 3 groups (3 cultures). Clap an allocated rhythm pattern, separately, then together.	Time: 10 minutes; Space: tiered lecture theatre ; Attitude: reluctance to participate during "serious" lecture time; shyness re group work; Group numbers: 200-600; Technology: hand clapping	Low risk creative play–individual contribution to a fun group exercise Making music/percussion to embody ideas about cultural reproduction Participation in class exercise a metaphor for community participation Using diversity to encourage group cohesion Low stakes–individual game, not assessable

Case	Example	Constraints	Creative outcomes
4	Getting started with Photoshop: Use one or two tools in the program and generate many images	About 10 minutes to 2 hours; Motivation: online student working alone; Technology: sophisticated graphics program (Photoshop) learnt while students study in the online environment	Getting started–not overwhelmed by affordances of the software (attitude and motivation) Quickly generate multiple visually interesting images Builds confidence, fluency and technical knowledge See that the first response is not always the best Low stakes– individual, not assessable, no external judgements
5	Role play (simulation): As a team member, pitch your company's credentials to a client	Time: 10 minutes for presentation; Group size: 4 students; Preparation time: 5 weeks; Scenario details specified for simulated architectural company Technology: Presentation tools and or printed marketing materials	Fun, productive group work simulating real world activity Creatively communicate with the client (graphically, verbally, socially); Generate ideas, find and solve communication and design problems, resolve creative decisions with team members Low stakes–assessable, but only a small proportion of marks allocated to task, and yet a complex and demanding task.

APPENDIX L: EXAMPLES OF BENEFITS AND LIMITATIONS OF THE ONLINE ENVIRONMENT FOR CREATIVE DEVELOPMENT

Creative characteristic	Creative Benefit and Tools	Creative Limitation
1. Ideation: generation of many ideas (divergent thinking)	Asynchronous or synchronous, online tools allow responses to be added at any time and over a period of time, potentially increasing the number and diversity of responses. Many opportunities for individual idea generation and group discussion of ideas, maximising possibilities. Tools: e.g. Google docs, forums, blogs, Twitter, Facebook.	Participants forget to add their responses. There is a need to "pull" students into the activity. "Push" reminders (e.g. emails) help increase participation.
2. Problem definition (convergent thinking)	Individual responses can be recorded online for consideration by the group, and then online tools used to reach to a decision. Tools: web conferencing, forums, polling	May require more time for completion compared with face-to-face resolution.
3. Reflection	Where asynchronous communication predominates delayed interaction time provides opportunities for considered thought and incubation. This is often useful before creative judgements are made and feedback offered. Tools: forums, blogs, file sharing sites	Lack of spontaneity. The immediacy of the dialogue or the motivation to respond may fade over time.
4. Dialogue: share ideas, articulate creative rationale, justify creative decisions	Dialogue can be captured and stored for review, and can be revisited as often as necessary. Tools: forums, blogs, file sharing sites	Comments once posted online are semi-permanent, even if deleted from the site, they may be stored elsewhere. Face-to-face interactions are less permanent.
5. Workshopping: sharing and critiquing creative work	Files can be exchanged and disseminated online, constructive critique and feedback recorded and shared. Tools: forums, Google docs, private Facebook group	If asynchronous, there may be delay before feedback is received; more time required for the process compared with face-to-face. Chance of misunderstanding more likely as fewer or no opportunities to rectify communication errors or convey meaning via body language.
6. Gallery: audience evaluation, curated, share	Opportunities to share students' creative work via web-based tools. Students can act as curators for the site. Tools: e.g. forums, blogs, photo and slide sharing sites, Facebook, Twitter.	Creative works must be digitised, e.g. photographed or videod in order to be added to the site.

APPENDIX M: EXEMPLARY DESIGNS AND METHODS FOR CREATIVITY

Note: Exemplary practitioner's expectations of students regarding creativity are outlined in the left hand column. Expectations are based on unit learning outcomes and case study analysis. The middle column identifies the practitioner's preferred vocabulary and expressions of creativity, plus strategies for promoting creativity. Practitioners' motivations for themselves, for being creative, and their students are summarised in the right hand column.

Expectations of students	Expression of creativity and strategies	Motivation for being creative
Case 1		
To be creative in order to develop the craft of writing: • be reflective; • critique influences of media, be creative not derivative; • use structures within unit to develop craft of writing; • "creative viewing"–open to inspiration from inner and outer world; • work ethic, commit to working with peers in pursuit of high standards of writing and critique.	Seldom says "be creative", never says "do creative writing" – blocks progress to state of flow. Prefers "experiment" and "play". Promotes student creativity through: • structured & focused writing tasks to develop skills (unit design); • stimulus activities & artefacts (e.g. writing, art); • creative environment, e.g. use of meditation, aesthetically pleasing spaces, supportive workshopping environment; • documented reflection on process.	*For self:* "the need to know"; writing is fun, rewarding, a place of discovery; a necessity to help learn to change, adapt and meet challenges. *For students:* the same as for self and assisting students find "voice".
Case 2		
To be creative so as to: • recognise, identify, discuss, and articulate creativity to develop eye and language; • apply creative processes & make something creatively; • communicate and justify own design processes; • translate others' concepts into effective design solutions; • build on the creative work of others (non-derivative).	Uses the term; manages expectations through explanation of meaning. Prefers "explore", "experiment", "play". Creativity is "energy", "fuel" and "currency"; genius is rare; creativity is you and the world. Promotes student creativity by: • developing foundational skills and the language to articulate design; • motivating students with excellent examples and modelling own and others' best practice; • hiding learning in the fun.	*For self:* "To have a creative life". Designer first, academic second. Authenticity found through creative engagement. *For students:* to have and to follow a creative life and transform their view of the world.

Expectations of students	Expression of creativity and strategies	Motivation for being creative
Case 3		
To creatively approach and engage with: • the meaning of engaged and participatory citizenship in a globalised world; • research and analysis of contemporary social structures and cultural practices, language and communication, media and visual culture; • academic thinking, writing, reflection and meaning making.	Does not ask students to be or think creatively, avoids "caught in the headlights" syndrome, encourages associative, pattern making thinking. Promotes student creativity by: • promoting participation and fun–embodied engagement (get out of your seat); • making surprising and memorable connections that students take beyond the classroom; • encouraging students to conduct their own daily social research develops agency and confidence; • breaking down traditional power relationships (modelling creative approaches); • storytelling and timely use of tools (e.g. theorists); focus on relevance.	*For self:* New ways to be an active citizen; education important to this (Freirean influence), dialogue, reflection, empowerment. *For students:* to empower students to question the social and cultural practices around them; make learning fun.
Case 4		
To learn creative decision-making and the creative process by acquiring skills in visual imaging software. In addition: • to apply conceptual, technical, and creative design skills; • to investigate and evaluate design principles and imaging software; • to evaluate and effectively communicate the digital images produced.	Asks students to be creative. Clear boundaries, defined criteria. Other terms e.g. "exploration", "experiment", "play", "speed", "fluency"; encourages mastery and intuition. Promotes student creativity by: • making tacit knowledge re creativity knowable (clear online instructions and guidelines); • setting practice exercises so students have early successes and confidence building; • encouraging students to find a time for focused and unfocused play; • requiring students to keep concept development journal - to reflect visually; • requiring students to go beyond practice exercises, to work freely and expressively within boundaries.	*For self:* Expression of self–always an artist, in commercial world and academia; combines teaching and artistic practice. *For students:* To demystify myths about being creative and what creativity is, but at the same time keeping the magic so students remain engaged.

Expectations of students	Expression of creativity and strategies	Motivation for being creative
Case 5		
To work with purpose, competence and maturity in a group; and to communicate creatively: • using design graphics, written and spoken forms; • empathising with clients' needs, and present them with design solutions; • as a professional, working with peers to develop practice-based, researched documents within simulated office environment.	Does not use term, prefers "experiment", "explore", "take risks", "be innovative", "think outside the box", Creativity embodied in multiple modes of communication and design thinking. Brings creativity from entire course into this capstone unit. Promotes student creativity through: • team exercises and role play; • playful approach coupled with high expectations; • modelling professionalism.	*For self:* expression of self–couldn't get out of bed if not creative; creativity in all aspects of life *For students:* to develop self in readiness for life as a professional architect, with high level communication skills (with builders, clients, contractors).